WORKING PLAN

OF THE

KALATOP FOREST;

BY

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INTRODUCTION.

Mr. Prinsep, then Commissioner of Amritsar, was the first to urge the preservation of the Kálatop Forest. He broached the question in 1862-63, and the necessity for taking immediate steps was subsequently acknowledged, and repeatedly recommended, by many officers—see appended correspondence.

On the 12th of September 1870, I received orders from the Conservator of Forests to proceed to Kálatop for the purpose of making a working plan. On my arrival, no map of any description could be found. It was so late in the season, that I deemed it unadvisable to begin a work which would take months to complete. I reported accordingly to the Conservator, and requested him to have the forest surveyed before a valuation survey and working plan were undertaken. Bhuli Khan, one of our Native Surveyors, was sent in the course of the same season to Kálatop to make a survey and map of the forest, which was in due time submitted to the Conservator. Mr. Powell sent this map, with his No. 164 of 23rd June 1871, to Colonel Reid, the Superintendent of Chamba, and, according to this survey, a settlement of the boundaries was effected.

Subsequently, Mr. Powell ordered me, in his letter No. 295 of 26th June 1871, to proceed to Kálatop, and to complete a working plan for the forest. I reached Kálatop on the 4th of August 1871 after collecting all available documentary information about the forest, which I embodied in a short resumé.

My first step was to examine the survey, which was made after I had left Kálatop in the previous year. I found it, however, so incorrect, that it was quite useless to me, and therefore had to begin another survey of the forest.

Notwithstanding that the map represented no real boundaries, and that I expressed my anxiety to alter them in some places, Colonel Reid insisted on retaining the old fictitious boundaries. No other course was therefore left open to me but to accept the boundaries as they existed in the memory and recollection of the Surveyor, and the Chaprási who pointed them out.

The survey once fairly started, I began by noting down the general formation, relative goodness of soil and forest, together with a general description of the same.

I divided the forest into compartments, and enumerated the trees in the more valuable compartments. I also enumerated all those trees which, viewed cursorily, belonged to a class to be utilized within the first period. Further, I cut and measured pattern trees, and calculated the reducing factor, and measured the average height of trees in the compartments, extracted increase per cent., and settled and registered the so-called rights. All this was done according to rules explained in the Conference paper of 1871-72.

I further calculated the cubic contents of 1st class trees in all enumerated compartments, as well as average cubic content per acre in those compartments which are to be utilized within the 1st period.

Thus, Part I contains—

1. A general descriptive part.
2. Special description of compartments, with preliminary proposals. These proposals are simply notes taken in the forest during the different inspections, and it will be seen that they do not always agree with the final proposals made after the completion of the calculations.
3. Enumeration Books' Totals. The books themselves are kept in original in the Lower Rávi office.
4. Extracts of enumeration books.
5. Measurements of pattern trees, calculation of reducing factor, and increase per centage.
6. The bases of all 1st class enumerated trees, multiplied by reducing factor, and average height: thus giving total cubic contents of all first class trees in each compartment.
7. Statement of rights.

These conclude Part I, on which Part II or the new scheme is based.

Part II begins—

Col. 1. With a descriptive part, giving reasons and explaining principles on which the new proposals as regards cutting, cultivation, and clearing are based.

Col. 2. The scheme itself is given in a space of only 4 pages. This is the most important portion, the essence, so to speak, of the working plan, and requires some explanations.

The left side contains, in a condensed form, the description of the present state of the forest, as extracted from Part I.

The relative goodness of soil is, for convenience sake, expressed in decimals, thus—

Exceedingly good	0·9
Very good	0·8
Good	0·7
Middling good	0·6
Middling	0·5
Middling bad	0·4
Bad	0·3
Very bad	0·2
Exceedingly bad	0·1

The figures entered under this head would be higher if the land had not been allowed to deteriorate so much through exposure.

The right side shows all new proposals I have finally decided upon.

All cuttings are entered in black, all cultivation in red ink, and, if clear cuttings are to be reculti-vated, the area is underlined with red ink.

T. means thinnings.

Cl. clearing of old first class and deteriorating trees.

R. marked in red ink stands for " Repairs of blanks."

The Remark column contains a general description of work for each compartment.

Col. 3. Shows the number of trees to be cleared out in the forest.

Col. 4. Gives the yield in material during the first period.

In the table of yield, deodar is kept separate, but the other prevailing pines which sell at the same rate are calculated as forming only one species.

In clearings, the calculation is based on the cubic contents of the number of trees to be cleared ; in clear cuttings, on the cubic content per acre.

For the second decennary, the increase per centage is added.

Col. 5. Gives the yield of material in assortments, and

Col. 6. Calculation of income and expenditure, based on the present state of the market.

In the costs under Budget head "AX," Rs. 276 per 1,000 cubic feet of fencing is calculated on Mr. Righy's accounts.

Under this head also the cost of fencing of all new cultivation is included ; all other items explain themselves.

WORKING PLAN

OF

WORKING CIRCLE, KALATOP.

PART I.

Description of the Forest Range, the former and present Condition, Working &c.

The forest range belongs to the Rajah of Chamba, and is under Chamba jurisdiction.

Position and boundaries.

It forms part of the forest leased by His Highness to the British Government. The range pertains to the Rávi Forest Division, and lies from 4 to 8 miles from the Sanitaria of Dalhousie and Balún.

There are two principal roads available for export, one runs through, the other close past the range. They are called respectively the Upper and Lower Chamba road. Some smaller roads, which can be used for export, are of a more recent construction, such as the road leading from the forest house to Báthri Galli, to Jagrota, and to the Lower Chamba road, near the Chíl bungalow.

The whole range is composed of two blocks, Kálatop and Dainkúnd, separated by the Báthri Galli, but forming one compact forest. The forest is now being demarcated by masonry pillars, with running numbers from 1—71 (see boundary register page)

Letter No. 11 of 1867 shows sanction for a survey of Kálatop; but, as far as I can judge, no further steps were taken in the matter. At any rate no map of that period can be found. The first map was made in October and November 1870, but condemned as wrong. The new map, made by Fateh Muhammad and Bhuli Khan, gives an area of 2870 acres.

Former maps.

The division into compartments, such as I found it, was but incomplete. Different parts of the forest were known as Bindraban, Gotri, Sarni, Jagrota,

Former division.

Lodra, Kálatop, Khajlota and Dainkúnd. But their boundaries were not sufficiently defined, and most of the compartments were too large to be of any practical value for the new working plan.

General formation—soil.

The formation of the range is granite and gneiss, covered with a fair soil, both as regards kind and depth, and in most places it is covered by a really excellent layer of humus.

The elevation is from 5,000 to 8,000 feet.

The forest is situated partly on the north slope of the Dainkúnd mountain, partly on the upper portion of a spur striking out from Dainkúnd to the Rávi. The west side of this spur is very steep, and covered with rock and boulders, with only a few springs, and no perennial water-course. To the east the declivity is more gradual, full of springs and water-courses, some of which have water through the driest season. Two of them are considerable rivulets.

The blanks on the west side are mostly covered with grass, oak, and rhododendron promiscuously scattered about. Some parts under partial shade are covered with indigofera, and on the moister east slopes the blanks are rapidly and densely covered with a Labiate "Dhus," Calamintha umbrosa, Indigofera heterantha, "Balsamine discolor," and "Polygonum bistortum," and on the less elevated parts, nettles, "Urtica heterophylla." Many of these plants indicate a moist and active soil.

Kind of trees and nature of growth.

The chief trees in the forest are Cedrus Deodara, Abies Smithiana, and Picea Webbiana, of the genus pines; Pavia Indica (Horse chestnut), and of the deciduous trees, Acer cultratum and Acer sterculiaceum, (maple), Ulmus campestris (elm). On the more moist parts, and species of Quercus (oak), mostly incana, on the drier and more arid parts.

On the outskirts of the forest, small but compact compartments are formed by oaks and some Rhododendron arboreum, which are scattered all over the blanks.

On the lower elevation, on the east and north-east slope of the Kálatop spur, the deodar predominates, but above 8,000 feet it gradually becomes more rare.

The older trees, especially on the north and north-east side, present a stunted appearance, and long

festoons of moss grown on the branches show that the elevation is too high for them. Dainkúnd, with a due north aspect, affords ample proof that this conclusion is correct.

On spots where now only few deodar are found, they have been replaced by Picea Webbiana and Abies Smithiana.

Horse-chestnut, maple, and elm, are found along the banks of rivulets. Oak extends over the entire range, but prefers the grass blanks. Amongst the pines, which are deserving of our first consideration, some strong timber trees may be found, but to all appearances the forest has not had a sufficiently fair chance; soil and climate of such superior description should have yielded a greater result.

Trees of different ages have grown up thickly without being judiciously thinned, and had to struggle with each other for space and light. On Dainkúnd, however, and in a few other compartments, the growth has been somewhat more regular.

The age of the trees varies so much that I beg to refer for information to the description of the single compartments; but I may remark here that nearly all the old trees are more or less damaged and diseased. There can be no doubt that severe ravages by fire have brought about this condition, and the statement of the natives confirms this opinion. They declare that extensive conflagrations occurred some eighty years ago.

The natural consequences of fires in pine forest are everywhere discernable: the trees are damaged near the roots, the vegetable mould has been destroyed, and insects have attacked the diseased trees. Many of the trees are so perforated with insect holes, that they appear to have been riddled with shot. But human hands have wrought more direct mischief. Many trees have been barked for resin. Great square pieces of bark have been removed immediately above the root, and many a vigorous tree (mostly Abies Smithiana) had to succumb under this cruel treatment.

I believe that the present method of collecting resin from standing trees might be greatly modified,* and more strict regulations would prevent irreparable damage.

* In some parts of Germany the trees in pine forests are wounded to obtain resin; but this is done with the greatest care according to strict rules and under strict supervision But even then it is found to have a deteriorating effect on the quantity and quality of the wood produced.

The general appearance, therefore, of the old growth may be said to be unhealthy, bearing evidence of former ill usage.

Trees less than 80 years old have a healthy look, but form irregular forests. We often find the best patches on steep and inaccessible places, and not, as might be expected, on a better soil and a more gradual declivity.

I ascribe this phenomenon to indiscriminate grazing and the consequent destruction of young plants.

The class of thickets is not badly represented, considering that nothing had ever been done to assist reproduction. The drawback is that in many parts they have been allowed to grow up too densely, and many exhibit a lanky appearance. I also remarked that one part of the forest close to the forest house, which, after being allowed to grow unchecked for 15 years, had, at one cutting, been thinned to the entire extent. I consider this experiment very dangerous. The forest was densely grown, and the standing trees were suddenly deprived of the inner support to which they had been accustomed so long.

I do not mean to say that a forest of that age should not have been thinned to the extent of the forest in question, but it should have been done gradually, in order to give the trees time to gain strength. The piece I allude to is fortunately protected from above by a mature forest, which lessens the danger considerably.

An observant Forester cannot fail to remark the detrimental effect of the snow on the young growth throughout the Kálatop Forest. On many places all young trees have grown in the form of the letter *S*.

The reproduction in the range is, on an average, very good, especially on all places where cattle have been kept out. On many spots, however, I have seen a good crop of Picea Webbiana and Abies Smithiana, with only a thin sprinkling of deodar plants, though there were numbers of deodar stumps (perhaps as many and more than those of other pines) showing that the former crop had been of a higher standard.

The reason why the reproduction was not equally good is obvious. It cannot be attributed to the fact that the seeds of other pines germinate more readily, or that the seedlings were exposed to fewer dangers than the deodar; but that the Cedars had been cut first, thus preparing the soil for the ready reception of the seed falling from the other pines.

It should be a standing rule that in all mixed forests depending on natural reproduction, the inferior trees should

be cut first, leaving the deodar to shed its seed on the soil already prepared for its reception by the admittance of light and atmosphere.

The humus is well decomposed on all shaded places, and well adapted to germinate the seed as soon as light is admitted.

The west side of the forest range will be more difficult of treatment, as there are many and extensive places where every trace of humus has disappeared. But even here I have no fear as to ultimate success.

Former utilization as to material and yield.

As regards the earlier history of the utilization of the Kalatop range, I cannot do better than quote Dr. Stewart's letter No. 364 of 7th August 1865 :—

"2. For some years after the establishment of Dalhousie, it would appear that no system of managing the forest was adopted; abuses, such as the removal and substitution of timber marks, were apt to occur, and the Rajah of Chamba received much less, as seignorage on trees, than he was entitled to. In 1861, however, it appears to have become evident that some system of management ought to be adopted; and in June of that year the Commissioner of the Division promulgated certain rules on the subject. The chief of these were that persons wanting to fell trees in Kálatop should apply to the Assistant Commissioner, and that no one should get more than 100 trees at a time without special sanction. Rs. 2-8 per tree was to be paid in within two months after date of application (since altered to at time of application), and trees not felled within two years from being applied for would be confiscated by Government. It was stated that the Rajah approved of these rules, with the exception of that regarding the seignorage, which he wished to be fixed at Rs. 5 a tree.

"3. In July 1861, the Judicial Commissioner is stated to have approved of the above rules, but the seignorage was fixed at Rs. 3-8 per tree, of which Rs. 1 was to go to a forest fund, and Rs. 2-8 to the Rajah. The assent of the latter had not then been received to this rate, nor is there any record in Dalhousie office that he did assent; but it is presumed that he must have done so, and he has received his proportion of the seignorage ever since it became due. At the same time the establishment for the forest was fixed at a Munshi on Rs. 10 and a Chaprási at Rs. 5 per mensem, at which it still continues.

"4. In 1862, both the Commissioner and Deputy Commissioner believed that certain improvements should be initiated; and Mr. E. Prinsep, the Commissioner of Amritsar, propos-

ed that the forest should be divided into segments to be felled in a rotation ; that roads should be made (which were budgeted for), and that a lease of at least 21 years should be obtained from the Rajah with a view to permanent improvement of the forest. It does not appear, however, that any of these measures were carried out.

" 5. In 1863, a set of rules for Dalhousie station were issued by the Judicial Commissioner. These included the substance of those concerning Kálatop, already mentioned, the chief modification being that the trees must be removed from the forest within 12 months. To this rule the whole of the Dalhousie Committee were strongly opposed, the chief objection being that, owing to the state of the roads, the timber had to be cut up into very small scantlings before removal, and that there was great difficulty in getting a sufficient number of sawyers, as they would not labor in the forest for more than three or four months in a year. The Commissioner recommended to the Financial Commissioner that these objections should be valid, and that the period for removal be fixed at two years.

" 6. In July 1863, seignorage rates were fixed for dead deodar trees, and for trees of various other kinds, all of which had till then been omitted. It was stated that there is need for the establishment of boundaries for the forest, but that even the limits of the station had not been definitely fixed. The question appears to have been mooted as to whether Government should not raise the seignorage fee, and make forest roads on their own responsibility. About the same time an Overseer seems to have been appointed to look after Kálatop and the trees about the station itself. He was (in whole or in part ?) paid by the Rajah, who naturally did not see what advantage would accrue to him from the arrangement, and, after a short trial, it appears to have fallen to the ground."

According to Captain Forbes' statement, about 2500 trees were felled previous to the year 1861 ; after that time an exact record is said to have been kept, and, by the end of 1864, 2116 trees were entered as sold and felled. At that time the total number of trees was set down at 18,000, and Dr. Stewart estimated that 2,500 to 3,500 were 1st class deodar trees, or over 6 feet in girth.

In 1865, the fellings on record are 341 Cedrus Deodara, 9 other pine trees, and 2 oaks.

In 1866, the register shows 117 Cedrus Deodara and 1 oak.

In 1867, 111 Cedrus Deodara and 4 other pine trees were sold.

In 1868, 338 deodar and 419 other pine trees were felled, according to the Cash-book.

In 1869, 372 deodar and 152 other pines were sold, according to Mr. Murray's Cash-book.

For 1870, a complete statement of trees felled, logged, and sawn, was kept by Mr. Rigby. The number of trees felled in that year was—

Deodar	56
Other Pines	63

In 1871 the account of trees felled gives —

Deodar	77
Other Pines	132

There can be no doubt that, in the first years, deodars were the only trees cut owing to the cheapness of the rate, and I believe that I do not commit myself to an error in drawing up the following table :—

	Cedrus Deodara.	Abies Smithiana and Picea Webbiana.	Oak.
Prior to 1861	2,000	500	...
1861–64	2,000	116	...
1865	341	9	2
1866.....	117	...	1
1867.....	111	4	...
1868.....	338	419	...
1869.....	372	152	...
1870.....	56	63	...
1871.....	77	132	...
Total ...	5,412	1,395	3

A comparison between income and material, before Mr. Rigby took charge of the forest, would be useless.

The value put on each tree under the title "royalty" was a fictitious one, and did not in any way represent the market value.

Mr. Rigby saw at once that deodar wood would sell readily for one rupee and more per cubic foot, and other pines for at least eight annas. He found that trees contain-

ing 100 and 200 cubic feet sold for a royalty respectively of Rs. 8 and 2, entailing a loss to Government of upwards of 1,000 per cent.

I give the result of 1871-72 :—

Cut.	Seignorage value.	Actual yield.
	Rs. A. P.	Rs. A. P.
77 Deodar	616 0 0	4,144 1 0
132 Abies Smithiana and Picea Webbiana	264 0 0	7,752 8 0
Total.....	880 0 0	11,896 9 0

Cutting, sale, and condition of market.

Up to the year 1870 the trees were sold standing for a royalty, and the only condition insisted on was that they should be of more than six feet circumference. In June 1870, Mr. Righy requested that he might be allowed to saw the trees up, and sell them in the shape of scantlings and planks.

The market during the last two years has been very good, and, as soon as the trees were cut up and sawn, they were sold.

Mr. Righy had the timber carried out of the forest and sold at the depôts. The cost of carriage was about nine pie per cubic foot in 1870-71, and one anna six pie per cubic foot in 1871-72. The increase in the cost of transport is thus accounted for; there are only two export roads, and the timber was felled at a greater distance from them than last year.

The Dalhousie and Balún sanitaria are our chief markets.

Mr. Righy apprehends that the demand for timber will diminish as soon as the barracks are finished. He thinks that the price of material and labor have increased too much to make private speculation profitable, and also predicts that house-building and therewith demand for timber, will greatly decrease. At the present moment we can command Rs. 1 to 1-8 per cubic foot for deodar, and about 8 annas for Picea Webbiana and Abies Smithiana.

The average price of cutting and sawing per 1,000 superficial feet is :—

	Rs.
For Picea Webbiana	22
For Cedrus Deodara	25

Former utilization of non-productive area.

A few plots of land in the forest were cultivated by "Gaddis," but as they did not pay rent to the Forest Department, the land and the right of cultivation was bought up by the Department. There is now only a small piece of land close to the Forest House under cultivation.

Miscellaneous forest produce.

The rent for grazing goes into the Treasury of the Rajah of Chamba. He derives also an income from the sale of leaves and "*Streunutzung*" in some parts of the forest. There is as yet no sale for seeds, berries, &c.

Any income derivable from the sale of slates belongs to Major Turton, of the 4th Gurkhas, who has rented the right to quarry within a radius of ten miles from Dalhousie. There is no prospect that any other kind of stone will ever yield an income.

The fines which have been levied were imposed by the Chamba Authorities, and were paid into the Chamba Treasury.

As yet no income has been derived from other minor products.

Existing rights, solvitudes.

No one has the right to cut down green trees of whatever description in the forest, but the villages Kukela, Dáda, Chota Lodra, Díl, Bara Lodra, Jagrota, Bangrota, Shama, and Sarni, have the right to collect dry fire-wood, but only by permits, and under the direction of the Officer in charge. Though Colonel Reid demands for the above-named villages, and for a few "Gaddís" and "Gujars," the right of grazing over the unreserved parts of the forest, this right is virtually only exercised as regards the grazing of cows, which are, throughout the Chamba State, exempt from grazing dues on account of their supposed sanctity.

The right of grazing other cattle has also been granted to the Zamindárs, though they derive little or no profit therefrom, as the Chamba Authorities impose and receive fees from the villages and "Gaddís" for the exercise of such rights. I therefore entered the name of the Rajah of Chamba, and *not* the names of the villages and Gaddís, in the register of rights.

The Chamba Vakíl claims the same right for the Dainkúnd "Gujars," but, according to Colonel Reid's agreement, they cannot claim such rights.

The right to cut and collect oak leaves for winter fodder does not exist, *vide* Colonel Reid's letter No. 39 of 6th June

1871, and though I consider it a hard case as far as the ryots are concerned, I cannot propose to burden the forest with any avoidable right without securing an equivalent to Government for it.

Right of way exists only on the Upper Chamba road. Three Gaddis, however, enjoy the right of way from the Upper Chamba road to the Forest House. The Forest Department is not compelled to keep up roads or bridges. The roads kept up and made in the forest are only for the good and interest of the forest itself.

For further information I must refer to the statement of rights with annexed correspondence.

The forest has no right to the labor of the people.

Administration and protection.

The former establishment consisted of one Munshi and one Chaprási on a pay of Rs. 10 and 5 respectively; but last year a resident Forest Ranger on Rs. 200 per mensem, and two Forest Watchers were added to the establishment.

There are two houses in the forest; the one just above compartment, "Ban Pahár," is for the accommodation of the Officer in charge of the Division; the other and smaller house at Báthrí Galli, is usually occupied by the Forest Ranger. A number of huts for the Native establishment have been built close to both houses.

The pay for coolie labor is Re. 0-4-3 per diem, of which sum the coolie receives four annas, and the mate 3 pies. The hours of labor are from 7 A. M. to 5 P. M. from May to August, and from 9 A. M. to 5 P. M. during September and October. The coolies enjoy also an hour's rest from noon till 1 P. M.

But in spite of good pay and short hours it is difficult to procure labor, and it is hardly possible to collect the coolies at the stipulated time in the morning.

The coolies live in huts built by themselves, but on Government account, as they received daily pay during the time they built them.

All felling, cutting, and carrying of timber is done by contract. The rates are mentioned under the heading of "Conditions of cutting and sale."

Cultivation & protection.

Up to the beginning of 1870, absolutely nothing had been done to cultivate and protect the young growth, with the exception of preventing fires. I go even further, and say that nearly every thing was done to prevent and impede the growth of the most valuable trees.

The system of "selection-felling," *(Plänterhiet)* which I do not mean to condemn as an entirely false method, was carried to an extreme. A tree here and there was felled, not admitting sufficient light to enable the soil to settle thoroughly and the young trees to spring up; enough, however, to promote the growth of a thicket of Indigofera, which became so dense by the time the place had acquired the requisite amount of air and light for the growth of young trees, as to effectually prevent the seed from striking root.

In my opinion it is one of the most difficult problems for the Foresters in charge of hill forests to ascertain the exact amount of shade and protection which soil and young growth require. I propose to discuss this point at greater length in the second part of the working plan.

There is another disadvantage connected with the "selection-felling" system, such as it used to be in vogue; the healthiest trees, able to bear good and fruitful seeds, were invariably selected for felling, and, instead of clearing the forest of disease, all the unhealthy and damaged trees were allowed to stand, and thus become the progenitors of a new forest.

Again, another grave mistake was made by felling the deodar before the other pines, thereby allowing the prepared soil to receive the seed of Abies Smithiana and Picea Webbiana, so that we have now thickets of these pines where the finest deodar crop might have been produced if rational treatment had been adopted.

Indiscriminate grazing is another drawback to reproduction.

The same mistakes that have been made in former years with regard to reproduction have also been made with regard to the protection of young growth.

Grazing did great damage, so did "selection-felling;" sometimes it would happen that a young growth had sprung up in the close vicinity of a fine tree. A Dalhousie customer would select this tree, and orders would be given to fell it. In its downfall it would destroy at one fell swoop hundreds of its own seedlings. The coolies did the rest with careless logging, sawing, and removing the timber.

We neglected to leave belts of mature trees on the hill tops to protect the young growth against the wind and snow drifts, and many a contorted thicket is a lasting proof of our neglect. Even now we allow thickets to grow up too densely, and there is no doubt that their safety will be endangered when we are obliged to deprive them by severe thinning of a great portion of their mutual support.

We also allowed Abies Smithiana and Picea Webbiana young growth to stifle young deodar, though the latter is the more valuable tree.

I have observed young deodar under old oak trees which had long ceased growing; nevertheless the trees had not been removed or even lopped. More of this in Part II.

Since 1870 we have adopted a more conservative mode of treatment. A part of the forest is now reserved and fenced in; the trees for cutting are selected by the Officer in charge of the Division, and some considerable plantations bear testimony to the earnestness of purpose to improve, and not to damage the forest, as was done up to a recent period.

I cannot give the exact cost of the cultivation per acre, because the nurseries have only just been finished, and transplanting has not yet begun.

Up to a recent date the construction of roads, bridges, and fences troubled us but little. Every purchaser took care to select his trees in easily accessible places, and made his own arrangements for the removal of the timber.

Fences were not wanted, as we had no reserved forests. But all this has been changed within the last two years. We have export roads, and, though not very practicably laid out, they are cheap, and answer the purpose. They cost Re. 1-4 per 100 running feet.

Mr. Murray began to fence at a cost of Rs. 7-12-0. This was an exorbitant price, even at Chamba rates, and Mr. Rigby lowered it to Rs. 6-12-0, and forced the contractor to wattle the fences all through.

The fences answer their purpose, though they include many a useless spot, and exclude a few places which would be advantageously reserved.

Dangers to which the forest is exposed, and protective methods formerly in use.

Fires have been the chief enemy, and, though a long time has elapsed since this calamity has visited Kálatop, everywhere traces are seen of its former ravages and subsequent damages in the shape of sore tops, insects, and thickets of Indigofera.

Grazing also has done a great amount of mischief. Not only have the young plants been destroyed, trodden down by cattle, and eaten by goats, but even an older growth has suffered in consequence of numberless tracks made by the heavy buffaloes grazing all over the forest. On Dainkúnd this is apparent after the rains, when the soil is soft. Track close

to track is formed, and on many places the roots of trees are entirely laid open and damaged. Thickets of weeds and shrubs successfully prevent on many places a reproduction amongst them. Indigofera is the most obnoxious. Snow-drifts are another danger which must be looked to, especially when we begin thinning our thickets.

The mischief done by men is not to be under-rated. Barking for resin has once been extensively carried on, and is even now practised in two of the compartments at Dainkúnd.

The lopping of oak trees for leaves is still carried on, though it is a known fact that it impedes the growth of timber.

Fires have been successfully kept out by strict orders and supervision, and so have cattle by means of fences. I found however, in some compartments fresh damages done by cattle, even in reserved parts, and in spite of the fencing. The animals had been driven through the gates by their owners.

On Dainkúnd sixteen Gujars are still in the habit of grazing their cattle, which amount to 500 head, mostly buffaloes, though, according to agreement, they have no right to do so.

The money expended on protecting the reserved forests against grazing amounts to Rs. 3,239. With the exception of the pay for two chaprásis no other sum has been expended to guard against or prevent other dangers.

AREA STATEMENT,

AND

DETAIL DESCRIPTION,

WITH

ROUGH PROPOSALS.

Block.	Compartment		Wood producing area.		Other Forest land.		Not wood producing area.		Total area.		Age
	Name.	No.	A.	R.	A.	R.	A.	R.	A.	R.	
Kálatop ...	Ahliwál ...	I	96	65	...	...	6	...	102	65	$\frac{0}{8}$
Do. ...	Jamadár ...	II	77	74	...	...	...	...	77	74	Blank.
Do. ...	Bindraban ...	III	70	5	...	...	...	...	70	5	$\frac{3}{100}$
Do. ...	Bandar ...	IV	78	10	...	...	2	50	80	60	$\frac{80-170}{1-15}$
Do. ...	Bara Pathar ...	V	60	...	...	...	1	48	61	48	$\frac{1-15}{100}$

Description of compartment.	Preliminary proposals.
Situation.—This compartment is situated between the Upper and Lower Chamba road. *Aspect.*—North-west. *Elevation*—From 5,000 to 8,000 feet. *Formation.*—This compartment is composed of a very steep slope, studded with granite rocks. *Soil.*—The rock is covered with only a thin layer of soil, but under trees and young growth it is fairly intermixed with humus, and on open places it is well bounded by a growth of dense grass. *Present state of forest.*—The compartment enumeration books will show that this compartment contains only a small amount of mature trees; and many of these are damaged, partly by the construction of the Chamba road, partly by barking for resin. I found some Abies Smithiana trees, the bark of which, to all appearances, had been cut off last year. Grazing and cutting of nearly all deodar trees are the only other damages. No perceptible effects of fires. In the lower part of the compartment, the mature trees consist mostly of oak; $\frac{2}{3}$ of the compartment may be put down as blanks, but, on the other parts, are good young thickets of Abies Smithiana and Picea Webbiana, with a few deodar intermixed. In the upper part of the compartment the young growth has suffered through cattle. Relative goodness 0·5 and 0·4.	Clear compartment of bad and defective trees, and cultivate the whole area with Cedrus Deodara, Abies Smithiana, and Picea Webbiana. I Class in table of period.
Situation.—To the north of the Upper Chamba road, it extends nearly down to the Lower Chamba-Dalhousie road. *Aspect.*—West. *Elevation.*—From 5,000 to 7,500 feet. *Formation.*—Partly a plateau, partly a very steep slope, with granite rocks. *Soil.*—Similar to the worst part of Ahliwál, only on the plateau deep and good. *Forest.*—Mostly oak trees, with a few pines. *Reproduction.*—Only on a few scattered places a good young growth of Abies Smithiana and Picea Webbiana, scarcely any deodar plants. The greater part of the compartment covered with grass. At present the whole compartment is unreserved.	The few scattered oak trees may be sold for fire-wood. The compartment must be reproduced by planting Abies Smithiana, Picea Webbiana, Cedrus Deodara, and Pinus excelsa in the lower portions.
Situation.—Above the Lower Chamba road. *Aspect.*—West. *Elevation.*—Between 5,000 and 7,500 feet. *Formation.*—Very steep slope, with numerous granite rocks. *Soil.*—Only a thin layer of good soil, but covered with a rich vegetable mould. *Forest.*—A sprinkling of mature trees of Cedrus Deodara, Picea Webbiana, and Abies Smithiana. Of these a great portion is diseased and damaged. The deodars left show in most cases, that they have been suppressed trees, the good ones having been cut. The mosses which cover most of the trees in the upper portion of the compartment are unmistakable signs of unsound constitution. The compartment contains good dense thickets of young Cedrus Deodara, Abies Smithiana, and Picea Webbiana from 2—15 years old, but good deodars are on many places over-grown by the less valuable trees. The compartment is reserved.	I propose to cut the old 1st class trees out after lopping them (they should, if possible, be felled on the snow); to repair all blanks with transplants, and to thin the present thickets, taking great care to give the young deodar preference.
Situation.—The compartment lies between the Lower Chamba and Forest House road. *Aspect.*—West and north-west *Elevation.*—From 5,000 to 7,500 feet. *Formation.*—Granite, with many rocks of considerable size on a steep slope. *Soil.*—Is good, though not of great depth; it is covered with rich humus and vegetation. *Forest.*—The forest is a mixture of mature Picea Webbiana, Abies Smithiana, and Cedrus Deodara. The latter are now in the minority, though many stumps indicate that the cedar was once the prevalent tree. On many places the trees have grown up too close together, and look under-sized for their age. About 10 acres are a blank, with a few oak trees; chesnut trees along the nallahs. *Reproduction.*—On all open places very favorable, but the cattle, though the compartment is reserved, have not been strictly kept out. I found traces of newly perpetrated mischief on young trees.	This compartment may be classed either in 1st or 2nd class, and there is no necessity of cutting and cultivation within the next 20 years, as the trees are healthier than in other parts of the forest. If cattle are strictly kept out, a natural young growth on all present blanks will cheapen and facilitate the reproduction.
Situation.—Between Lower Chamba and Forest House road. *Aspect.*—West and north-west. *Elevation.*—From 5,000 to 7,500 feet. *Formation.*—Granite, with very large rocks and boulders, and some steep cliffs.	Cutting out all the old 1st class trees, protecting carefully the young growth, and replenishing of all blanks, as well as thinning of the existing thickets, will be our task here. Period Class IV.

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Block.	Compartment. Name.	Compartment. No.	Wood producing area. A.	Wood producing area. R.	Other forest land. A.	Other forest land. R.	Not wood producing area. A.	Not wood producing area. R.	Total area. A.	Total area. R.	Age.
Kalátop ...	Deoka Galli ...	VI	102	89	13	...	...	...	115	89	Blank.
Do. ...	Ban Pahár ...	VII	85	...	...	...	...	...	85	...	60–100 1–15
Do. ...	Gotri ...	VIII	82	90	...	...	...	...	82	90	1–10 60 80 100
Do. ...	Matola ...	IX	100	75	...	...	...	...	100	75	Blank.
Do. ...	Sín ...	X	48	36	...	...	...	...	48	36	Blank.
Do. ...	Sárni ...	XI	111	75	...	...	...	...	111	75	$\frac{1}{80}$

Description of compartment.	Preliminary proposals.
Soil.—As in compartment IV—a well decomposed soil, but of little depth. A good cover of humus nearly all through the compartment. *Forest.*—Some old unhealthy trees, mostly deodar, fell of former ravages by fire. All are insect-eaten, covered with festoons of moss, and top-sore. The compartment is a collection of thickets of the three pines, Cedrus Deodara, Abies Smithiana, and Picea Webbiana. Wherever there is sufficient soil, the ground is fairly covered with young trees from one to fifteen years old. During the last year some of the thickets have been allowed to grow too close together.	
Situation.—Between the Lower Chamba and the Forest House road. *Aspect.*—West. *Elevation.*—From 5,000 to 8,200 feet. *Formation.*—Granite and gneiss steep hangings, but few rocks. *Soil.*—A thin layer of poor soil of decomposed rocks covered with grass. *Forest.*—Covered only with a few oak and rhododendron trees scattered about, and some stunted deodar trees. A nursery of ¾ of an acre, the forest house, with compound, garden, and a few acres of mixed forest, as well as 3 Gaddis' huts, with cultivation, belongs to this compartment.	Oaks may be cut or left according to the market. The few old deodars are of no great value, and may be left as seed trees, and taken away as soon as the young growth appears some time during the first period. The whole compartment requires artificial cultivating with Cedrus Deodara, Picea Webbiana, and Abies Smithiana on the upper, and Pinus Longifolia on the lower portions.
Situation.—Between the Lower Chamba road and the Forest House. *Aspect.*—West. *Elevation.*—From 5,000 to 7,500 feet. *Formation.*—Gneiss, with some granite rocks. *Soil.*—Though the slope is very steep, the soil is particularly good and rich, with a good cover of humus, and a rich vegetation. *Forest.*—The forest appeared to have had most of its deodar cut out. Nevertheless, the manual of the measures gives a considerable number. This makes me slightly doubtful as to the correctness of their entering the different species of trees in this compartment, though every care was given to supervision. The trees in this compartment have suffered very much by insects, and even young trees have been destroyed, but only where previously damaged.	Though the compartment has considerably suffered through over-cutting, fires, and consequently insects, the amount of 2nd and 3rd class trees makes it necessary, or at least desirable, to enter the compartment in the second class of the period table. At the same time I would propose to cut trees which are deteriorating, and fill up blanks. An immediate recultivation will repay itself by a higher yield in the second rotation, even should the compartment not be entered for cutting and cultivation before the 2nd period.
Situation.—Between the Lower Chamba road and the path from the Forest House to the Chil bungalow. *Aspect.*—West and north-west. *Elevation.*—From 5,000 to 7,000 feet. *Formation.*—Gneiss and granite. *Soil.*—Good, of decomposed rock and humus, covered with shrubs. *Forest.*—Though very much damaged and over-grown with shrubs, there is still enough good material left in the compartment to make in time a good forest. The trees in it are mostly 2nd and 3rd class Cedrus Deodara, Abies Smithiana, and Picea Webbiana mixed. The reproduction has been kept back by Indigofera thickets.	The cutting and cultivation of this compartment, by virtue of its 2nd and 3rd class trees, ought to fall into the second period, but it has already been over-cut, and nothing has been done for reproduction. The result is a forest of so undecided an average class, that it must unavoidably be entered into the 1st class, that is to say, we must cut within the first period all first class trees, and let the 2nd and 3rd class trees grow with the present young growth and the new artificial cultivation, thus giving a yield of stronger timber in the second rotation.
Situation.—Between the Chil bungalow path and Lower Chamba road. *Aspect.*—West. *Elevation.*—Between 5,000 and 6,000 feet. *Formation.*—Gneiss, with granite boulders, steep slope. *Soil.*—A good covering of decomposed gneiss rock, but only on some places covered with humus. *Forest.*—The whole compartment is covered with grass, oaks, rhododendron, and a few scattered pines. Above rocks, in the nullahs, and other inaccessible places, some good thickets of young pines.	The oak trees which stud the compartment may be cut for fire-wood, which I think may be easily sold, being so close above the Chamba road. The compartment must be recultivated with Cedrus Deodaras, Abies Smithiana, and Pinus excelsa. I recommend an intermixture of deciduous trees, which should be at once grown in all the nurseries.
Situation.—Between the Lower Chamba road, and the compartments Gotri and Ban Pahár. *Aspect.*—West. *Elevation.*—Between 5,000 and 5,500 feet. *Formation.*—Granite and gneiss. *Soil.*—A good loam, covered with humus, on parts protected by trees. *Forest.*—Only a few oak and pine trees scattered over the area; the rest is covered with jungle of Indigofera and grass.	I propose to cultivate this compartment with Pinus longifolia.
Situation.—Between Nala Bangotra and compartment Matola. *Aspect.*—North-east. *Elevation.*—From 5,000 to 6,500 feet. *Formation.*—Granite. *Soil.*—A rich soil, covered with humus. *Forest.*—Composed of good thickets, and young growth containing 3rd and 4th class trees, but on many places blanks covered with Indigofera and nettles. Only a few mature trees, mostly deodar.	All blanks of any importance should at once be filled with deodar and deciduous trees. Even should these young trees not be fit for use at the time of the next cutting, they will prevent deterioration of the soil, and, growing up with the next cultivation, will become strong timber trees during the following rotation. This will prevent our losing the interest on the capital value of the soil,

Block.	Compartment.		Wood producing area.		Other forest land.		Not wood producing area.		Total area.		Age.
	Name.	No.	A.	R.	A.	R.	A.	R.	A.	R.	
Kálatop ...	Shámа ...	XII	88	80	...	...	...	...	88	80	0
Do. ...	Bangrota ...	XIII	101	21	...	...	...	...	101	21	60/80
Do. ...	Kothi ...	XIV	102	50	...	...	...	...	102	50	...
Do. ...	Jagrota ...	XV	115	60	...	...	...	...	115	60	1-15
Do. ...	Zakhira ...	XVI	108	25	...	...	...	...	108	25	1-15/60/80
Do. ...	Lodra ...	XVII	58	75	...	...	...	...	58	75	60/80

Description of compartment.	Preliminary proposals.
	All thickets must be *carefully* thinned though there is not much damage from snow or storm in this sheltered compartment.
Situation.—Above the Lower Chamba road on both sides of the Bangrota Nala. *Aspect.*—North. *Elevation.*—Between 4,500 and 5,500 feet. *Formation.*—Granite, greater part a gentle slope. *Soil.*—A thick cover of rich loose loam, with a good amount of humus. *Forest.*—The whole compartment is covered with a thicket of oak, and interspersed with a few rhododendron and deodar of different ages.	This is the most interesting compartment; it is our aim to convert a valueless oak and rhododendron jungle into a mixed forest of deodar and deciduous trees. I have made the following plan. That portion of the oak jungle, which has been set apart for cultivation, should be thinned after the rains, and left exposed to the influence of the climate, so as to settle the loose soil. In the following spring young deodar should be planted, between the few deciduous trees left, 5 feet apart and, if necessary, the deciduous might be lopped during the rains, when the influence of the sun is no longer to be feared. It is impossible to state the right amount of thinning, but the Officer in charge will easily see this. The deodar may be intermixed with deciduous trees, and on the more arid places Pinus longifolia may be taken as a substitute, but it must be remembered that this tree will not grow well in the shade of deciduous trees.
Situation.—Opposite compartment Sárni, on the Bangrota Nala. *Aspect.*—North-west. *Elevation.*—From 5,200 to 7,500 feet. *Formation.*—Granite, steep slope, with many rocks and cliffs. *Soil.*—A covering of decomposed rocks and good humus. *Forest.*—Composed of thickets, 4th and 3rd class pines, mostly deodar, but irregular, with many blanks.	The treatment of this compartment will be the same as that of Sárni. Filling up considerable blanks and thinning; dead trees may be cut out with advantage.
Situation.—East of Forest House.. *Aspect.*—North and north-east. *Elevation.*—From 6,000 to 8,000 feet. *Formation.*—Granite, steep slope, with rocks and boulders. *Soil.*—A good decomposed soil, with good humus cover. *Forest.*—Composed of 2nd, 3rd, and 4th class pine trees, mostly deodar, with a good number of thickets, and a few hundreds of 1st class trees interspersed.	The compartment should be entered into the 3rd class. Thinning will be our chief work here, but again I recommend an early recultivation of all extensive blanks.
Situation.—East of the Jagrota ridge. *Aspect.*—North and north-east. *Elevation.*—From 5,000 to 6,500 feet. *Formation.*—Gneiss, not very steep slope. *Soil.*—A thick layer of loam, on many parts covered with humus. *Forest.*—Mostly deodar thickets, interspersed with blanks, covered with Indigofera; only a few mature trees.	Entered into the 4th class. Repeated thinnings and recultivation of all blanks.
Situation.—Between the compartments Jagrota, Bangrota, and Kothi. *Aspect.*—North, north-east, and east. *Elevation.*—From 5,500 to 8,000 feet. *Formation.*—Granite, not very steep slope. *Soil.*—A rich light loam, with excellent humus cover. *Forest.*—This forest is a mixture of the prevailing pines Cedrus Deodara, Picea Webbiana, and Abies Smithiana in all their ages. There are still a good number of mature trees, and 2nd, 3rd, and 4th class trees down to thickets and young growth. A nursery of 2¾ acres has been made in this compartment. The greater part of it is composed of young deodar taken out of the forest. Some sowings have been made of deodar and foreign pines.	This compartment should be ranged into the 2nd class, but again I must recommend thinnings of the existing thickets, as well as artificial cultivation of the more considerable blanks, with a mixture of Cedrus Deodara, Abies Smithiana, Picea Webbiana, and deciduous trees. Cedrus Deodara prevailing.
Situation.—To the north of compartment Zakhira, on the Lodra Nala. *Aspect.*—North-west. *Elevation.*—From 5,500 to 7,000 feet. *Formation.*—Granite, steep slope, with cliffs. *Soil.*—Decomposed rocks, with a good humus. *Forest.*—This also is a mixture of the three pines in all their ages. Picea Webbiana is only scantily represented.	This compartment is in the same condition as Zakhira, and will therefore receive very much the same treatment. It has to be entered into the 4th class owing to the necessity of equal distribution more than for any other reason.

Block.	Compartment		Wood producing area.		Other Forest land.		Not wood producing area.		Total area.		Age.
	Name.	No.	A.	R.	A.	R.	A.	R.	A.	R.	
Kálatop ...	Palc Lodra ...	XVIII	122	30	...	...	...	...	122	30	...
Do. ...	Kukéla ...	XIX	131	85	...	...	...	...	131	85	...
Do. ...	Doda ...	XX	95	65	...	...	...	...	95	65	...
Do. ...	Goti ...	XXI	132	25	...	...	...	...	132	25	...
Do. ...	Kálatop ...	XXII	132	23	...	...	...	...	132	23	...
Diánkúnd ...	Deokapáni ...	XXIII	203	05	...	...	...	...	203	05	...
Do. ...	Kajlota ...	XXIV	197	80	...	...	...	...	197	80	60 80 100

Description of compartment.	Preliminary proposals.
Situation.—In the north of Lodra, on the Lodra Nala. *Aspect.*—North. *Elevation.*—From 5,000 to 5,500 feet. *Formation.*—Granite, gentle slope *Soil.*—Good, covering of light loam, with little or no humus. *Forest.*—Some oak and deodar thickets, with a few 1st, 2nd, and 3rd class cedars and other pines; a great part of it covered with Indigofera intermixed with some young deodars.	This compartment also in most of its parts is a blank, and should be set apart for recultivation in the first period with Cedrus Deodara, Abies Smithiana, a few Picea Webbiana, Pinus longifolia, and deciduous trees. The few thickets must be thinned. The first class trees may be cut.
Situation.—Between compartment Pále Lodra and Báthri Nala. *Aspect.*—West and south-west. *Elevation.*—From 5,000 to 5,600 feet. *Formation.*—Granite. *Soil.*—Light loam, intermixed with gravel. *Forest.*—Only a few oak and Pinus longifolia, on a blank covered with grass.	The compartment is a *bonâ fide* blank, with some few oaks, which will, considering the distance from Dalhousie, scarcely sell as fuel, but might be made into charcoal. I propose te cultivate with Pinus longifolia.
Situation.—South of Kukela, on Bátri Nala. *Aspect.*—West and south-west. *Elevation.*—From 5,500 to 6,500 feet. *Formation.*—Granite, even, though steep slope. *Soil*—A thin covering of light loam. *Forest.*—Only a few pine and oak trees dispersed over a blank covered with grass and indigofera.	Very much the same as compartment Kukela. It should receive the same treatment, but in the higher parts some Cedrus Deodara might be intermixed.
Situation.—North of Doda, on the Bátri Nala. *Aspect.*—West and south-west. *Elevation.*—From 5,800 to 6,400 feet. *Formation.*—Granite, with some steep slopes and boulders. *Soil.*—Only a light covering of loam and humus wherever trees are growing. *Forest.*—The compartment may be considered a blank, with only a few pine trees and oaks here and there. The greater part of it is covered with grass, Indigofera, and other shrubs, though in some places small but good thickets of deodar show that the tree will grow when protected.	Again, more or less a blank, and nothing remains to be done but to cultivate in the first period with Cedrus Deodara, Abies Smithiana, Picea Webbiana, and deciduous trees.
Situation.—Between Forest House road and compartment Kothi. *Aspect.*—West. *Elevation.*—From 6,000 to 7,500 feet. *Formation.*—Granite, not very steep slope, with only a few cliffs. *Soil.*—Good, deep light loam, with a rich humus cover. *Forest.*—This compartment again shows a mixture of the three chief pines in mostly all their ages. Deodar prevails, and Picea Webbiana has the fewest representatives. The forest does not come up to the expectations the soil would justify, especially the older portion, which shows marks of former fires. More recently the forest has been cut in a careless manner, and we see thickets of shrubs where we should have deodar and other pines. Wherever young deodars, Picea Webbiana, and Abies Smithiana have sprung up, all show a healthy growth. Some thickets have grown up too densely.	Though the compartment contains a great amount of 1st class trees, I would propose to leave it untouched till the second period. Thinning the few existing thickets, and leaving the reproduction at present to nature, cutting top-sore and actually deteriorating trees.
Situation.—Between Upper Chamba road and Nala Bátri. *Aspect.*—North. *Elevation.*—From 6,000 to 7,800 feet. *Formation.*—Granite, steep slope, very steep in the lower portion. *Soil.*—Good, rich loam, with good humus cover. *Forest.*—A nearly equal mixture of the three prevailing pines, with a good intermixture of deciduous trees. The forest has been over-cut on many places, and suffered by fire and grazing; many of the old trees have been damaged; the young ones are healthy. On all spots where the forest has been too severely cut, thickets of shrubs have sprung up. The young deodar in the compartment have a healthy appearance.	I wish to cut all 1st class and the damaged 2nd class trees out, and cultivate on the places of cuttings as well as on all blanks. The good 2nd and 3rd class trees I propose to keep for the clear cutting. I shall therefore enter it into the 4th class. In cultivation I propose to prefer the Cedrus Deodara and intermix with Abies Smithiana and Picea Webbiana. The few existing thickets must be cleared out, so as to benefit the deodar.
Situation.—Between the Balání Devi Nala and Deokapáni. *Aspect.*—North-west. *Elevation.*—From 5,800 to 7,500 feet. *Formation.*—Granite; the upper part is steep; the lower portion is a very steep slope, with bolders and rocks. *Soil.*—Mixture of good loam and rich humus. *Forest.*—Very much like the compartment Deokapáni, though less deodar. The compartment contains a good amount of 4th class trees, and the older trees show not the same amount of unhealthiness as in the compartments above the Upper Chamba road.	The compartment should be entered in the 1st class, but should only be worked at the end of the first period, and even then I would recommend the preservation of healthy 4th class trees. Cultivation with Cedrus Deodara, Abies Smithiana, and Picea Webbiana at the time of cutting.

Block.	Compartment.		Wood producing area.		Other forest land.		Not wood producing area.		Total area.		Age.
	Name.	No.	A.	R.	A.	R.	A.	R.	A.	R.	
Diánkúnd ...	Hádban ...	XXV	115	85	...	...	...	...	115	85	100/0
Do. ...	Baláni Devi ...	XXVI	115	28	...	...	...	...	115	28	100/0
Do. ...	Juferánwala ...	XXVII	97	95	...	...	...	...	97	95	100/0

Description of compartment.	Preliminary proposals.
Situation.—Above the Upper Chamba road, on the Balâni Devi Nala. *Aspect.*—North-west. *Elevation.*—From 7,000 to 8,500 feet. *Formation.*—Granite, gentle slope. *Soil.*—Mixture of good loam and rich humus. *Forest.*—The forest in the compartment consists chiefly of Picea Webbiana, with some Abies Smithiana intermixed. The compartment, especially the upper part, is in a fearfully ruined state. Large trees lie rotting in the forest; many standing trees are dead, others dying, and a large amount show the germ of diseases, all caused by fire, cattle, and insects. There is no young growth on account of faulty distribution of shade and light, but more so on account of cattle. The under-growth consists of Daphne and Impatiens.	Entered into the 1st class for immediate cutting and recultivation with Picea Webbiana and Abies Smithiana. I would intermix deodar only in the lower portion.
Situation.—Above Upper Chamba road. *Aspect.*—North. *Elevation.*—From 7,000 to 8,500 feet. *Formation.*—Granite, gentle slope. *Soil.*—Rich loam with humus cover. *Forest.*—Nearly clear; Picea Webbiana forest of 1st, 2nd, and 3rd class. The present state of the compartment is, if possible, worse than the compartment Hadban.	To be entered into the 1st class for immediate use and cultivation with Abies Smithiana and Picea Webbiana. Deodar only to be intermixed in the lower parts.
Situation.—Above Upper Chamba road. *Aspect.*—North. *Elevation.*—From 7,000 to 8,500 feet. *Formation.*—Granite, gentle slope. *Soil.*—Rich loam, with humus covered with vegetation of impatiens, daphne, &c. *Forest.*—In a still worse state than the two former compartments.	To be entered into the 1st class for immediate use and cultivation, the same as the compartment Balâni Devi.

REGISTER OF TREES.

Name and No. of Compartment.	Description of trees.	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	Picea Webbiana.															
Ahliwál No. I.	Good	8	32	14	15	5	39	12	19	9	10	3	31	13	7	5
	Dying	1	...	3	...	...	...	...	2	...	1	...	...	1	1	1
	Abies Smithiana.															
	Good	1	1	7	...	1	7	1	6	6	5	7	6	...	1	1
	Dying	...	...	...	...	1										
	Deciduous trees.															
	Good	1	2	1	...	...	...	...	2	1	6	...	3	1	...	2
	Dying	...	...	...	...	...	...	...	1	...	2	...	...	...	...	...
	Cedrus Deodara.															
Jamadár II.	Good	...	...	1	...	1	...	...	7	2	4	7	1	2	...	...
	Picea Webbiana.															
	Good	3	1	1	1	...	1	1	9	...	1	1	5	...	...	...
	Dying	...	...	...	...	...	1									
	Deciduous trees.															
	Good	3	2	4	3	1	10	3	11	...	3	2	33	5	3	5
	Dying	...	1	5	2	...	...	...	4	4	...	...	3	2	1	...
	Oak.															
	Good	...	...	...	...	...	2	1	3							
	Dying	2	...	1	...	...	...	...	2	...	1	...	...	...	...	...
	Cedrus Deodara.															
Bindrában III.	Good	43	28	29	14	20	17	6	7	6	17	3	34	4	3	2
	Dying	...	...	...	...	...	...	1	1	2	...	1	...	1		
	Picea Webbiana.															
	Good	17	11	32	6	13	16	12	7	7	19	5	37	12	3	2
	Dying	1	...	...	...	...	...	...	1	...	3	...	1			
	Abies Smithiana.															
	Good	42	36	70	23	30	19	6	19	5	28	6	50	5	3	6
	Dying	...	...	...	...	...	...	...	...	...	...	3	1	...	1	...
	Deciduous trees.															
	Good	2	...	11	2	1	1	3	3	...	3	1	6	2	1	...
	Dying	...	...	...	...	...	...	...	...	...	...	...	1			
	Oak.															
	Good	...	1	...	1	1	...	...	1	1	2	...	8	2	2	1
	Dying	...	...	...	...	...	...	...	1	...	...	...	1	1		
	Cedrus Deodara.															
Bandar IV.	Good	91	75	78	48	39	65	29	61	29	56	38	37	12	16	13
	Dying	3	3	1	...	...	...	1	...	1	...	2	...	1	...	...
	Picea Webbiana.															
	Good	84	43	64	69	23	46	33	48	22	52	43	43	23	12	20
	Dying	...	1	...	...	...	2	...	4	...	...	...	...	...	1	...
	Abies Smithiana.															
	Good	77	55	82	72	49	72	53	83	53	64	39	71	41	26	31
	Dying	3	...	...	2	1	2	...	2	...	...	...	...	...	2	1
	Deciduous trees.															
	Good	13	8	8	15	3	13	2	7	3	4	...	11	6	6	3
	Dying	1	2	3	3	...	2	...	1	...	...	...	2	1	...	...

28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
4	1	4	2	...	1	...	1	...	...	...	...	...	...	...	...	1	1	...	...	...	...	1						
1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1											
1	...	5																										
...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	2										
2	...	...	1																									
1																												
5	5	...	1	...	...	1																						
...	...	...	...	...	...	2																						
...	...	1																										
2	...	...	1	1	1	1																						
4	...	7	1	7	...	...	1	4	...	...	...	2	...	1	...	...	...	...	...	1								
4	8	7	1	8	...	2	2	3	1	1	1	2	...	...	1	1	...	...	...	...	...	1						
...	...	...	2	...	...	1	1	1	1	...	1	...	...	...	...	...	...	...	...	...	...	1						
1	1	1	1	1																								
...	2	2	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	2						
15	7	10	10	28	5	22	13	19	20	15	13	8	17	5	10													
...	...	...	...	...	...	1	...	1	...	2	...	...	1															
21	21	31	27	24	13	25	11	15	15	15	19	17	11	14	10	3	4	4	2									
...	...	...	...	3	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2							
32	15	31	18	28	23	30	25	32	20	20	20	16	16	20	30	11	10	5										
...	...	...	...	...	...	1	...	1																				
1	5	14	...	9	1	2	4	2	5	7	...	4																
...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	1											

Name and No. of Compartment.	Description of trees.	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	Oak.															
Bandar IV. *Concld.*	Good	20	15	14	12	16	7	7	9	2	10	6	8	7	2	1
	Dying	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Cedrus Deodara.															
Bara Pathar V.	Good	7	3	1	15	3	14	1	14	5	7	4	7	...	1	...
	Picea Webbiana.															
	Good	...	...	5	2	...	1	1	1	1	2	...	3	...	5	...
	Abies Smithiana.															
	Good	9	...	15	4	12	6	3	3	2	3	...	10	...	1	2
	Dying	...	...	...	1	2	...	...	...	...	...	...	2			
	Deciduous trees.															
	Good	7	8	15	12	13	7	4	15	10	17	8	16	6	3	...
	Dying	1	...	...	1	1	1	...	...	1	1	1	2	...	...	...
	Oak.															
	Good	1	3	1	...	3	...	5	...	...	1	...	...	2	5	3
	Dying	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Cedrus Deodara.															
Deoka Galli VI.	Good	3	3	8	6	9	5	11	6	2	8	...	7	3	...	1
	Dying.															
	Abies Smithiana.															
	Good	...	...	...	...	...	...	...	...	...	...	...	...	1		
	Deciduous trees.															
	Good	7	9	9	10	13	25	6	32	6	46	16	28	21	8	18
	Dying	1	1	...	...	1	...	...	...	1	...	...	...	...	1	1
	Chil.															
	Good	...	...	...	...	...	...	...	...	...	...	4	5	...	...	...
	Cedrus Deodara.															
Ban Pahár VII.	Good	86	102	111	76	33	70	39	62	21	53	33	46	37	38	41
	Dying	...	2	1	1	...	2	...	...	...	...	...	1	...	...	1
	Picea Webbiana.															
	Good	24	37	31	27	24	30	12	35	34	25	16	35	13	40	8
	Dying	...	3	...	1	...	...	...	...	...	1	...	1	1	...	1
	Abies Smithiana.															
	Good	59	48	52	39	16	32	10	26	13	44	25	40	34	10	27
	Dying	...	1	1	...	...	1	...	1	1	1	...	1	1	...	...
	Deciduous trees.															
	Good	4	14	11	16	14	22	6	25	18	20	10	29	13	31	13
	Dying	...	...	...	...	...	2	1	1	1	2	1	3	1	1	...
	Oak.															
	Good	4	5	4	7	3	4	1	6	1	2	...	3	12	11	...
	Dying	...	...	...	...	...	...	...	...	...	1	...	...	1	2	...
	Cedrus Deodara.															
Gotri VIII.	Good	61	60	36	52	37	25	11	29	7	20	29	9	6	23	7
	Dying	2	2	2	2	1	1	...	2	...	...	1	...	...	...	1
	Picea Webbiana.															
	Good	13	19	21	17	15	20	6	9	7	11	5	7	10	10	5
	Dying	...	...	...	...	...	1	...	1							

28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
4	2	5	7	4	9	8	10	23	...	...	5	...	...	...	1	3												
...	...	...	1																									
1	...	8	...	...	...	1	...	...	...	...	2	...	1															
...	...	...	3	...	...	...	...	...	...	4																		
..	1	...	...	...	...	...	...	...	...	1	...	1																
5	...	10	5	14	1	6	2	2	...	...	1																	
...	...	2	...	...	...	1																						
2	...	5	2	...	...	3	3	5	5	...	...	...	1															
...	...	1																										
...	1	...	...	1																								
8	7	7	3	2	2	1	...	...	...	...	...	2	...	...	...	..	1											
...	1																											
2	...	...	...	...	...	...	2																					
22	21	13	4	15	7	10	4	...	4	...	...	...	1	...	...	2	...											
...	2	...	...	...	...	1	...	2																				
13	1	9	4	2	...	...	4	...	1	1	2	...	...	...	...	...	...	...	...	1								
1	...	1	...	...	...	...	...	...	...	...	1																	
9	21	21	18	39	3	2	1	...	...	2	1	...	...	...	...	1												
...	...	1																										
20	7	3	...	7	4	2	4	4	...	1	...	6	...	...	1	1	...	1	...	2								
1	...	1	...	...	1																							
4	...	4	1	10	...	1	2	...	4	...	1																	
...	...	...	...	1																								
31	5	11	3	3	5	2	6	...	...	3																		
5	14	3	8	1	4	4	5	...	2	...	...	3	...	...	...	2												

Name and No. of Compartment.	Description of trees.	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	Abies Smithiana.															
Gotri VIII *Concld.*	Good	21	30	34	24	17	36	19	24	15	37	14	14	15	15	11
	Dying	...	1	1	...	...	...	...	2	...	...	...	...	...	...	...
	Deciduous trees.															
	Good	30	39	18	29	7	26	7	38	...	31	14	36	14	27	13
	Dying	1	2	2	2	1	...	...	10	...	3	...	6	2	...	1
	Oak.															
	Good	3	4	4	2	3	3	5	10	...	3	...	1	1	...	1
	Dying	...	2													
	Cedrus Deodara.															
Matola IX.	Good	9	3	2	2	6	4	2	2	2	5	1	2	1	3	3
	Picea Webbiana.															
	Good	1	1	1	...	...	3	1	...	...	1	...	...	...	...	2
	Abies Smithiana.															
	Good	3	5	10	1	2	6	...	2	3	8	...	1	1	2	2
	Dying	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1
	Deciduous trees.															
	Good	15	21	12	18	13	24	16	20	12	24	11	34	17	17	9
	Dying	5	1	3	5	1	4	4	2	1	4	4	7	...	4	...
	Cedrus Deodara.															
Kothi XIV.	Good	118	149	108	104	49	98	20	42	8	35	4	30	10	4	1
	Dying	...	...	1	...	...	2	...	...	1	1	...	...	...	3	2
	Picea Webbiana.															
	Good	22	23	24	17	18	17	16	11	7	13	2	9	1	1	1
	Dying	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...
	Abies Smithiana.															
	Good	92	103	80	59	24	59	25	38	10	30	9	38	14	19	3
	Dying	...	1	...	...	...	...	...	...	...	...	...	3	...	...	...
	Deciduous trees.															
	Good	25	44	18	19	7	13	9	10	1	9	1	2	7	4	3
	Dying	1	1	...	2	...	2	...	1	...	...	...	...	...	...	...
	Oak.															
	Good	9	2	2	...	9	...	...	6	...	...	...	...	...	...	...
	Dying	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Cedrus Deodara.															
Zakhira XVI.	Good	110	148	113	109	70	100	58	80	37	76	29	41	18	33	13
	Dying	4	4	2	...	...	1	1	...	...	1	2	2	1	3	1
	Picea Webbiana.															
	Good	63	68	52	57	49	60	30	66	17	30	25	34	26	26	25
	Dying	2	1	...	4	...	4	...	11	...	1	3	5	3	5	...
	Abies Smithiana.															
	Good	75	118	76	198	84	96	32	67	23	50	15	42	44	22	15
	Dying	1	1	1	2	...	4	1	2	2	3	...	1	4	...	2
	Deciduous trees.															
	Good	33	34	28	21	11	15	5	20	7	4	...	12	9	9	3
	Dying	2	...	...	2	...	...	2	1	3	...	...	5	...	2	1
	Oak.															
	Good	3	2	1	3	1	4	5	1	...	...	...	4	...	2	...
	Dying	...	...	...	1	1	1	...	...	...	...	...	...	1	1	...

28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
18	6	10	11	12	5	5	2	...	...	...	...	2																
1	...	1	...	1																								
5	26	28	25	9	3	8	2	2	1	1	3	7	...	1	...	...	...	...	...	1								
5	1	2	1	...	...	...	...	1	...	2	...	1																
...	...	4	...	...	...	...	3	...	...	2	...	...	...	2														
3	1	3	4	...	...	7	1																					
2	...	1	...	...	...	...	...	...	...	...	1																	
6	2	4	1	...	1	...	1																					
...	1																											
8	5	17	4	9	13	...	...	5	...	2	...	8	3	3	2	...	2	...	...	1	...	1						
2	...	2	...	1	1	...	1	1																				
6	7	8	...	3	2	6	...	3	...	6	5	6	...	...	5	3	2											
1	...	1	...	...	1	...	...	...	...	1																		
2	...	2	...	...	1	...	...	...	...	...	1	...	...	...	...	2												
...	..	...	...	...	...	...	...	...	...	...	1																	
7	7	9	1	5	...	...	5	2	...	...	3	2	2	...	...	...	3											
...	1	...	...	...	...	...	...	...	...	...	...	1																
1	...	...	...	1	...	...	...	...	...	...	...	1																
...	...	...	...	...	...	...	...	1																				
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2												
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1													
17	10	18	11	10	7	30	13	15	5	17	17	5	...	...	2	4	2	...	...	...	1							
1	1	...	...	...	2																							
24	22	6	16	15	7	...	8	3	2	4	...	14	1	3	4	4	1	5	1	3								
3	2	2	2	...	1	1	...	2	..	2	...	1	...	...	1													
22	3	11	2	13	4	8	16	1	8	7	...	8	1	1	2	9	...	...	...	1								
1	1	1	2	1	...	1	1	1	1																			
8	4	4	4	1	...	4	...	3	...	4	1	1	...	2														
...	...	...	1	1	1	1	2	1	...	1	1																	
4	2	...	...	...	...	...	1																					
...	...	...	...	...	1																							

Name and No. of Compartment.	Description of trees.	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	Cedrus Deodara.															
Lodrá XVII.	Good	58	84	71	76	42	73	36	38	51	32	23	33	24	7	22
	Dying	3	...	1	2	1	4	2	2	...	2	...	1	...	...	...
	Picea Webbiana.															
	Good	33	42	41	42	28	18	24	46	26	16	18	24	17	24	9
	Dying	...	4	2	4	...	1	4	2	1	...	...	2	1	1	2
	Abies Smithiana.															
	Good	56	60	46	45	54	40	32	37	35	31	2	20	28	26	17
	Dying	...	2	3	2	2	...	3	5	...	1	2	1	2	1	1
	Deciduous trees.															
	Good	7	9	7	3	9	1	10	6	6	11	3	2	4	7	5
	Dying	1	...	...	...	1	2	...	...	...	1	1	...	...	1	...
	Cedrus Deodara.															
Phal Lodra XVIII.	Good	25	28	22	20	8	19	12	7	6	20	2	4	5	11	3
	Dying	...	...	...	...	...	...	...	1	...	...	...	1			
	Picea Webbiana.															
	Good	10	7	13	4	8	3	9	1	5	5	6	...	4	...	...
	Abies Smithiana.															
	Good	13	26	20	16	14	17	12	11	2	3	9	1	4	4	2
	Dying	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
	Deciduous trees.															
	Good	18	9	14	19	10	9	10	2	10	10	3	13	5	3	7
	Dying	...	...	2	1	...	...	...	2	...	...	...	...	...	1	1
	Cedrus Deodara.															
Goti XXI.	Good	19	20	27	18	18	14	3	12	2	9	1	12	11	2	6
	Picea Webbiana.															
	Good	1	5	4	1	...	4	9	3	7	4	...	...	...	5	...
	Abies Smithiana.															
	Good	3	3	3	7	1	13	4	6	2	...	2	1	2	...	...
	Deciduous trees.															
	Good	17	14	14	9	7	4	9	...	3	5	2	...	1	1	1
	Dying	...	1													
	Cedrus Deodara.															
Kálatop XXII.	Good	184	272	195	212	116	188	98	162	94	121	69	129	96	66	62
	Dying	2	3	...	3	4	3	1	4	1	2	2	3	4	2	...
	Picea Webbiana.															
	Good	149	194	187	195	121	201	93	197	97	163	75	134	102	79	65
	Dying	7	6	4	4	1	5	4	3	...	1	...	6	4	3	1
	Abies Smithiana.															
	Good	152	310	224	289	152	273	87	284	115	223	54	213	125	112	70
	Dying	4	1	1	3	2	4	3	2	1	2	2	2	4	...	6
	Deciduous trees.															
	Good	58	54	41	46	35	61	33	76	22	36	10	43	21	18	5
	Dying	1	1	1	2	1	3	3	4	3	4	...	5	...	1	...
	Oak.															
	Good	9	15	22	24	8	22	5	55	2	22	2	20	18	8	3
	Dying	...	1	2	3	3	4	...	10	...	2	1	5	2	6	...

28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
15	15	18	2	9	9	14	5	13	12	2	8	7	8	...	10	...	2	...	...	4								
3	1	...	1	1	1	2	1	1	...	1	...	3	1	1	...	1												
18	8	17	9	14	9	2	11	3	5	...	2	12	...	1	...	4	...	...	...	3								
4	...	2	2	...	1	1	...	1	2	...	1																	
9	9	20	9	8	6	10	6	3	8	7	...	13	...	1	...	1	3	...	...	3	8	1	1	1	1			
...	5	...	2	1	2	...	2	3	...	...	1	5	2	...	...	3												
7	...	6	3	...	6	...	2	2	1	1	...	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	
1	1	...	1	1																								
2	1	6	...	...	1	2	1	...	...	1																		
...	4	4	2	3	2	...	3	2	1	1																		
...	1	15	2	3	1	...	5	3	...	1	...	...	1															
...	...	...	...	...	...	...	...	...	...	...	1																	
2	2	2	...	1	5	...	...	1	...	...	2																	
...	...	...	...	...	...	1																						
...	3	2	...	...	3	...	...	4	...	2	1	...	2	1														
7	3	2	1	...	...	...	...	6	2	1	1	1	3	3	2	3	1	1	1									
...	3	...	6	2	...	...	7	...	...	...	...	2	1															
2	...	...	1	2	1	2																						
59	22	48	19	18	28	32	32	5	8	3	8	23	...	...	1	4	1	...	1									
...	1	...	1	1	1	...	...	...	1	1	1	1	...	...	...	2												
89	61	117	43	77	30	30	45	16	12	20	16	64	21	5	3	14	3	1	3	1	1	5	...	...	...	...	1	1
2	1	2	1	9	1	...	3	1	1	2	...	5	1															
113	35	83	42	35	47	34	35	24	15	5	9	29	11	4	3	3	2	1	3	1	...	4	...	1	1			
2	3	2	1	1	...	1	2	...	...	1	...	1	...	1	...	...	...	1	...	1								
18	7	26	9	15	4	2	14	5	6	4	2	6	...	2	2	4	1	...	1	...	...	3	...	...	...	1		
2	1	1	3	4	1	...	...	...	1	...	...	1																
5	1	20	7	13	5	3	11	1	3	4	1	12	3	1	...	3	...	...	1									
3	1	4	1	7	...	...	2	...	...	...	...	2	...	...	...	1												

Name and No. of Compartment.	Description of trees.	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	Cedrus Deodara.															
Deokapáni XXIII.	Good	232	244	216	188	138	192	155	109	105	125	70	81	76	78	56
	Dying	...	5	4	...	2	1	1	1	4	4	...	5	3	...	3
	Picea Webbiana.															
	Good	54	98	73	104	44	115	38	67	60	90	48	83	77	59	30
	Dying	...	2	1	2	...	1	...	3	1	...	1	2	...	2	...
	Abies Smithiana.															
	Good	138	221	205	162	110	205	79	141	81	117	72	89	60	59	62
	Dying	...	4	...	3	...	1	1	1	1	4	2	3	2	5	...
	Deciduous trees.															
	Good	62	130	101	99	49	121	39	64	41	97	25	67	37	32	13
	Dying	3	1	2	3	...	1	1	7	3	2	3	2	3	1	2
	Oak.															
	Good	42	86	71	67	40	77	28	57	11	31	8	25	35	20	22
	Dying	3	4	2	6	4	5	1	6	2	3	...	13	1	2	1
	Cedrus Deodara.															
Kajlota XXIV.	Good	31	55	50	55	33	80	19	65	11	47	17	59	12	21	14
	Dying	...	2	...	...	1	...	1	3	...	..	2	3	...	1	...
	Picea Webbiana.															
	Good	78	169	138	116	120	161	34	182	32	120	47	164	75	66	25
	Dying	...	4	4	1	...	2	...	4	...	3	...	7	3	1	...
	Abies Smithiana.															
	Good	69	87	83	96	54	113	54	135	51	79	53	112	81	58	55
	Dying	1	1	1	...	...	3	3	...	1	2	2	1	...	1	3
	Deciduous trees.															
	Good	18	64	43	47	25	46	21	74	17	34	12	53	22	22	17
	Dying	1	..	1	...	2	1	...	3	...	...	1	3	1	1	...
	Oak.															
	Good	20	51	28	42	21	29	5	41	10	28	4	49	15	14	13
	Dying	2	2	4	...	...	...	1	2	1	3	1	3	1	1	...
	Picea Webbiana.															
Hádban XXV.	Good	69	127	114	120	78	134	49	111	38	104	54	124	46	81	45
	Dying	...	1	...	2	1	...	1	2	...	2	..	4	2	4	...
	Abies Smithiana.															
	Good	86	76	59	61	72	69	30	81	45	47	32	44	80	12	43
	Dying	...	...	...	...	...	1	...	...	...	...	...	1	1	...	...
	Deciduous trees.															
	Good	10	7	7	7	3	7	...	10	1	8	1	17	8	13	2
	Dying	...	...	1	2	...	...	...	...	1	...	...	...	1	...	...
	Oak.															
	Good	3	3	8	3	6	8	...	9	...	6	4	9	3	5	7
	Dying	...	...	1	...	1	...	2	...	...	1	...	...	...	1	...
	Picea Webbiana.															
Bawáni Devi XXVI.	Good	89	90	64	91	71	123	36	111	49	111	56	144	68	82	67
	Dying	...	2	1	...	1	2	2	6	3	2	2	4	2	3	1
	Abies Smithiana.															
	Good	70	87	67	83	40	74	30	65	35	70	89	97	53	55	64
	Dying	...	4	...	1	...	2	...	3	1	8	2	3	2	2	1

28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	60
52	56	67	52	18	17	25	14	32	13	8	12	14	3	2															
1	2	1	1	2	...	...	2																						
62	14	54	23	28	22	36	41	16	12	11	16	33	21	15	19	8	5	2	...	3	1	21	...	...	1				
1	...	2	...	4	...	2	3	...	2	...	2	9	...	...	...	...	...	...	...	1	...	3							
31	22	56	21	30	25	13	26	17	13	8	8	12	6	12	3	5	1	1	..	...	1	4	...	...	...	2	1		
3	...	2	...	3	1	2	...	...	2	...	...	1																	
26	7	31	7	11	13	20	15	5	7	10	9	11	3	3	4	...	...	...	...	...	...	1							
1	...	11	1	1	1	...	1	.	...	1	...	1																	
3	...	36	9	10	11	...	8	10	10	9	5	14	...	2	...	7	2	...	2	2	...	1	2						
1	...	5	1	1	...	1	3	...	...	1	...	1																	
21	24	21	10	19	6	7	3	2	2	11	...	8	1	...	1	...	1	2	...	1									
2	...	1	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1							
73	22	62	38	51	42	22	25	17	15	30	11	31	3	6	10	1	2	1	...	1	1	3	...	...	...	...	...	...	1
5	...	3	...	4	2	2	2	...	...	...	...	3	...	...	...	..	1												
75	32	50	47	56	35	38	39	9	17	1	13	43	30	5	1	1	1	1	...	1	...	5							
1	...	1	...	2	2	2	2	3	...	...	...	...	1																
18	11	25	14	16	11	8	12	13	1	5	9	4	2	2	...	1	...	...	2	...	...	4							
...	...	2	...	...	...	...	...	..	1	...	...	1																	
15	6	25	7	15	4	6	13	4	8	5	7	14	6	...	...	1	1	...	...	...	...	2							
...	1	2	...	1	2	...	...	...	...	...	...	2																	
77	58	96	55	82	37	16	56	23	23	10	9	64	4	8	2	7	5	2	1	4	...	12	...	..	1	3			
5	1	4	...	6	1	1	2	3	1	1	3	7	1	...	...	...	...	...	1	..	...	...	...	1					
26	39	42	40	25	32	20	21	13	16	2	4	11	...	2	1	3	1	.	2	...	...	3	1	...	...	1	1		
...	1	1	...	...	1	1																							
6	2	6	5	...	...	...	4	3	2	4	1	5	2	1	...	...	1	...	...	1	...	1							
2	...	...	...	...	...	...	...	...	...	...	...	1																	
10	...	6	1	6	2	...	1	...	2	2	...	3	...	...	1	1	...	...	...	1	...	...	...	...	...	2			
...	...	...	...	...	...	...	1	...	...	...	2	...	1																
117	53	79	51	88	30	52	50	20	20	17	14	49	3	3	1	2	...	...	...	3	...	2							
2	1	6	1	6	3	3	...	...	...	1	.	1																	
43	31	65	37	28	37	31	18	15	9	9	11	34	14	15	3	2	2	1	...	8	...	6							
2	2	...	1	...	...	...	...	...	1	1	...	2	1	1	1	...	...	...	...	...	...	1	...	...	...	...	...	...	2

Name and No. of Compartment.	Description of trees.	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	Deciduous trees.															
Bawáni Devi XXVI. *Concld.*	Good	...	...	3	3	...	...	1	6	2	...	2	2	1	1	2
	Dying	...	...	1	...	1	...	...	...	1	...	...	...	...	1	
	Oak.															
	Good	3	4	5	7	5	4	4	7	3	2	...	3	11	2	1
	Dying	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...
	Cedrus Deodara.															
	Good	...	1	...	1											
	Picea Webbiana.															
Juferán wala XXVII.	Good	55	66	47	46	42	45	26	51	32	57	49	68	33	32	27
	Dying	2	2	...	...	...	...	2	...	...	...	...	1	...	...	1
	Abies Smithiana.															
	Good	31	36	27	35	45	30	23	37	22	36	28	39	19	16	18
	Dying	...	1	1	...	...	2	3	2	1	4	...	4	2	...	...
	Deciduous trees.															
	Good	7	6	13	2	7	7	7	5	5	6	1	9	9	6	3
	Dying	...	...	...	...	...	...	...	...	...	...	...	1			
	Oak.															
	Good	1	2	4	2	1	8	2	3	:	3	3	2	2	7	3
	Dying	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...

28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
...	...	2	...	...	...	1	2	...	...	4																		
3 1	2	6	8	9	10	11	5	...	...	...	...	4	...	...	...	...	...	...	...	...	1							
36 1	13 1	39 2	17 1	28 ...	7 ...	18 ...	13 1	10	7	5	6	15	2	1	1	8	2	...	...	...	1							
15 1	9 3	18	4	11	11	6	15	6	8	5	2	11	...	2	...	2	...	1	...	2	...	1						
5	4	7	...	...	...	1	2	1	1	...	1	...	1															
3 1	...	4	2	2	2	2	4	1	1	2	...	1																

EXTRACT OF REGISTER.

Name and Description of trees.	1st Class above 23."	2nd Class from 18" to 22."	3rd Class from 13" to 17."
I.	*Ahlirall.*		
Picea Webbiana ... ... Good	75	89	74
" ... ... Dying	7	3	4
Abies Smithiana ... ... Good	21	25	10
" ... ... Dying	...	...	1
Deciduous trees ... ... Good	6	9	4
" ... ... Dying	4	3	...
II.	*Jamadár.*		
Cedrus Deodara ... ... Good	13	13	2
Picea Webbiana ... ... Good	7	12	6
" ... ... Dying	...	1	...
Deciduous trees ... ... Good	60	27	13
" ... ... Dying	8	8	8
Oak ... ... Good	...	6	...
" ... ... Dying	1	3	3
III.	*Bindraban.*		
Cedrus Deodara ... ... Good	52	53	134
" ... ... Dying	2	4	...
Picea Webbiana ... ... Good	87	61	79
" ... ... Dying	1	4	1
Abies Smithiana ... ... Good	110	77	201
" ... ... Dying	13	...	...
Deciduous trees ... ... Good	15	10	16
" ... ... Dying	1	...	...
Oak ... ... Good	20	4	3
" ... ... Dying	2	1	...
IV.	*Bandar.*		
Cedrus Deodara ... ... Good	333	240	331
" ... ... Dying	8	2	7
Picea Webbiana ... ... Good	443	201	283
" ... ... Dying	7	6	1
Abies Smithiana ... ... Good	610	325	335
" ... ... Dying	5	4	6
Deciduous trees ... ... Good	80	29	47
" ... ... Dying	6	3	9
Oak ... ... Good	105	35	77
" ... ... Dying	1	...	...
V.	*Bara Pathar.*		
Cedrus Deodara ... ... Good	25	41	29
Picea Webbiana ... ... Good	15	6	7
Abies Smithiana ... ... Good	16	17	40
" ... ... Dying	2	...	3
Deciduous trees ... ... Good	79	53	55
" ... ... Dying	6	3	3
Oak ... ... Good	36	6	8
" ... ... Dying	1	...	...
VI.	*Deoka Gulli.*		
Cedrus Deodara ... ... Good	13	32	29
Abies Smithiana ... ... Good	1	...	...
Deciduous trees ... ... Good	124	115	48
" ... ... Dying	3	1	3
Chil ... ... Good	13	...	...
VII.	*Ban Pahár.*		
Cedrus Deodara ... ... Good	300	245	408
" ... ... Dying	7	2	4
Picea Webbiana ... ... Good	150	136	143
" ... ... Dying	6	1	4
Abies Smithiana ... ... Good	254	125	214
" ... ... Dying	4	4	2
Deciduous trees ... ... Good	159	91	59
" ... ... Dying	9	7	...
Oak ... ... Good	53	14	23
" ... ... Dying	4	1	...
VIII.	*Gotri.*		
Cedrus Deodara ... ... Good	143	92	246
" ... ... Dying	2	4	9

EXTRACT OF REGISTER—*continued.*

Name and Description of trees.	1st Class above 23."	2nd Class from 18" to 22."	3rd Class from 13" to 17."
Picea Webbiana ... ... Good	88	53	85
" ... ... Dying	...	2	...
Abies Smithiana ... ... Good	140	131	126
" ... ... Dying	3	2	2
Deciduous trees ... ... Good	226	102	123
" ... ... Dying	22	13	8
Oak ... ... Good	14	21	16
" ... ... Dying	...	...	2
IX. Matola.			
Cedrus Deodara ... ... Good	29	15	22
Picea Webbiana ... ... Good	6	5	3
Abies Smithiana ... ... Good	21	19	21
" ... ... Dying	2	1	...
Deciduous trees ... ... Good	171	96	79
" ... ... Dying	23	15	15
Compartments No. X. Seea, XI. Sárni, XII. Shama and XIII. Bangrota are uncounted.			
XIV. Kothi.			
Cedrus Deodara ... ... Good	111	203	528
" ... ... Dying	9	4	1
Picea Webbiana ... ... Good	22	64	104
" ... ... Dying	2	1	...
Abies Smithiana ... ... Good	129	162	358
" ... ... Dying	5	...	1
Deciduous trees ... ... Good	20	42	113
" ... ... Dying	1	3	4
Oak ... ... Good	2	6	22
" ... ... Dying	1	...	...
Compartment No. XV. Jagrota is uncounted.			
XVI. Zakhira.			
Cedrus Deodara ... ... Good	318	351	559
" ... ... Dying	13	3	10
Picea Webbiana ... ... Good	279	203	289
" ... ... Dying	33	16	7
Abies Smithiana ... ... Good	255	268	551
" ... ... Dying	17	12	5
Deciduous trees ... ... Good	69	51	127
" ... ... Dying	17	6	4
Oak ... ... Good	13	10	10
" ... ... Dying	3	1	2
XVII. Lodra.			
Cedrus Deodara ... ... Good	262	230	331
" ... ... Dying	19	10	7
Picea Webbiana ... ... Good	210	130	186
" ... ... Dying	20	8	10
Abies Smithiana ... ... Good	241	175	261
" ... ... Dying	33	9	9
Deciduous trees ... ... Good	55	34	35
" ... ... Dying	6	3	2
XVIII. Pal Lodra.			
Cedrus Deodara ... ... Good	39	64	103
" ... ... Dying	1	1	...
Picea Webbiana ... ... Good	32	28	42
" ... ... Dying	...	...	...
Abies Smithiana ... ... Good	52	45	89
" ... ... Dying	2	...	...
Deciduous trees ... ... Good	46	41	70
" ... ... Dying	3	2	3
Compartments No. XIX. Kukéla and XX. Doda are uncounted.			
XXI. Goti.			
Cedrus Deodara ... ... Good	50	40	102
Picea Webbiana ... ... Good	43	27	11
Abies Smithiana ... ... Good	26	25	17
Deciduous trees ... ... Good	13	21	61
" ... ... Dying	...	...	1

EXTRACT OF REGISTER—*concluded.*

Name and Description of trees.	1st Class above 23."	2nd Class from 18" to 22."	3rd Class from 13" to 17."
XXII.	*Kálatop.*		
Cedrus Deodara ... ... Good	734	663	979
" ... ... Dying	21	11	12
Picea Webbiana ... ... Good	1,134	751	846
" ... ... Dying	43	13	22
Abies Smithiana ... ... Good	1,114	982	1,127
" ... ... Dying	31	12	11
Deciduous trees ... ... Good	229	228	234
" ... ... Dying	20	17	6
Oak ... ... Good	145	106	78
" ... ... Dying	35	16	9
XXIII.	*Deoká páni.*		
Cedrus Deodara ... ... Good	746	686	1,018
" ... ... Dying	20	11	11
Picea Webbiana ... ... Good	761	370	373
" ... ... Dying	34	5	5
Abies Smithiana ... ... Good	660	623	836
" ... ... Dying	26	8	7
Deciduous trees ... ... Good	357	362	441
" ... ... Dying	29	14	9
Oak ... ... Good	253	204	306
" ... ... Dying	31	17	19
XXIV.	*Kajlota.*		
Cedrus Deodara ... ... Good	263	222	224
" ... ... Dying	12	4	3
Picea Webbiana ... ... Good	845	529	621
" ... ... Dying	33	10	9
Abies Smithiana ... ... Good	859	432	389
" ... ... Dying	21	9	23
Deciduous trees ... ... Good	284	192	217
" ... ... Dying	10	4	4
Oak ... ... Good	234	113	162
" ... ... Dying	14	7	8
XXV.	*Hádban.*		
Picea Webbiana ... ... Good	1,005	436	508
" ... ... Dying	48	5	4
Abies Smithiana ... ... Good	517	272	354
" ... ... Dying	6	1	...
Deciduous trees ... ... Good	85	26	34
" ... ... Dying	4	1	3
Oak ... ... Good	66	23	23
" ... ... Dying	5	3	2
XXVI.	*Bavání Devi.*		
Picea Webbiana ... ... Good	1,091	430	405
" ... ... Dying	40	15	4
Abies Smithiana ... ... Good	729	274	347
" ... ... Dying	23	14	5
Deciduous trees ... ... Good	17	9	6
" ... ... Dying	1	1	2
Oak ... ... Good	76	20	24
" ... ... Dying	2	1	...
XXVII.	*Juferánwali.*		
Cedrus deodara ... ... Good	...	...	2
Picea Webbiana ... ... Good	438	211	256
" ... ... Dying	8	2	4
Abies Smithiana ... ... Good	249	148	174
" ... ... Dying	10	12	2
Deciduous trees ... ... Good	51	27	35
" ... ... Dying	1	...	...
Oak ... ... Good	41	19	10
" ... ... Dying	2	1	...

Pattern Trees.

Bindrában.

No. of trees.	Botanical name.	Length in feet.	Girth in inches.	Mean in inches.	Cubic contents.	
1	Abies Smithiana	0	68	64	22·63	Total height ... 108 feet.
		10	60			Ideal cylinder... 221·82 cubic feet.
		20	54	57	17·95	Reducing factor 0·48
		30	50	52	14·94	Age 125
		40	48	49	13·26	Increase % ... 0·80
		50	42	45	11·19	
		60	39	40½	8·84	
		70	35	37	7·56	
		80	32	33½	6·01	
		90	21	26½	3·73	
				Total contents ...	106·11	
2	Ditto	0	69	66	24·07	Total height ... 104 feet.
		10	63			Ideal cylinder... 250·34 cubic feet.
		20	59	61	20·56	Reducing factor 0·49
		30	56	57½	17·95	Age 112
		40	54	55	16·71	Increase % ... 0·81
		50	50	52	14·94	
		60	45	47½	12·20	
		70	36	40½	8·84	
		80	29	32½	5·65	
		90	21	25	3·45	
				Total contents ...	124·37	
3	Picea Webbiana	0	78	78	33·62	Total height ... 110 feet.
		10	78			Ideal cylinder... 356·38 cubic feet.
		20	75	76½	31·91	Reducing factor 0·48
		√30	69	72	28·64	Age 170
		40	...	...	...	Increase % ... 0·59
		50	...	58½	55·77	
		60	48	...	...	
		70	36	42	9·74	
		80	30	33	6·01	
		90	24	27	4·02	
		100	18	21	2·43	
				Total contents ...	172·14	
4	Ditto.	0	56	56	17·33	Total height ... 106 feet.
		10	56			Ideal cylinder... 190·63 cubic feet.
		20	53	54½	16·11	Reducing factor 0·51
		30	51	52	14·94	Age 170
		40	48	49½	13·26	Increase % ... 0·64
		50	46	47	12·20	
		60	43	44½	10·69	
		70	40	41½	9·28	
		80	34	37	7·56	
		90	28	31	5·31	
		100	18	23	2·92	
				Total ...	109·60	

Kálatop (near gate).

1	Ditto	0	67	67	24·80	Total height ... 97 feet.
		10	67			Ideal cylinder ... 240·62 cubic feet.
		20	60	63½	21·93	Reducing factor 0·50
		30	57	58½	18·59	Age 85
		40	51	54	16·11	Increase % ... 1·18
		50	47	49	13·26	
		60	39	43	10·21	
		70	33	36	7·16	
		80	23	28	4·33	
		90	14	18½	1·79	
				Total contents ...	118·18	

Kálatop (near gate)—continued.

No. of trees.	Botanical name.	Length in feet.	Girth in inches.	Mean in inches.	Cubic contents.	
2	Picea Webbiana	0	67	67	24·80	Total height ... 93 feet.
		10	67			Ideal cylinder... 230·70 cubic feet.
		20	64	65½	23·34	Reducing factor 0·49
		30	60	62	21·24	Age 72
		40	55	57½	17·95	Increase per cent. ... 1·39
		50	42	48½	7·97	
		60	34	38		
		70	26	30	4·97	
		80	17	21½	2·43	
			Total contents ...		102·70	
3	Abies Smithiana	0	65	65	23·34	Total height ... 90 feet.
		10	65			Ideal cylinder... 210·13 cubic feet.
		20	60	62½	21·24	Reducing factor 0·48
		30	54	57	17·95	Age 70
		40	47	50½	13·81	Increase per. cent. ... 1·43
		50	41	44	10·69	
		60	31	36	7·16	
		70	23	27	4·02	
		80	14	18½	1·79	
			Total contents ...		100·00	
4	Ditto	0	64	64	22·63	Total height ... 98 feet.
		10	64			Ideal cylinder... 221·82 cubic feet.
		20	60	62	21·24	Reducing factor 0·49
		30	56	58	18·59	Age 74
		40	50	53	15·52	Increase per cent. ... 1·35
		50	45	47½	12·20	
		60	36	40½	8·84	
		70	27	31½	5·31	
		80	20	23½	2·92	
		90	14	17	1·59	
			Total contents ...		108·84	

Jagrota.

1	Picea Webbiana	0	72	72	28·64	Total height ... 90 feet.
		10	72			Ideal cylinder... 257·83 cubic feet.
		20	67	69½	26·31	Reducing factor 0·47
		30	56	61½	20·56	Age 73
		40	51	53½	15·52	Increase per cent. ... 1·37
		50	45	48	12·73	
		60	36	40½	8·84	
		70	24	30	4·97	
		80	16	20	2·21	
			Total contents ...		119·78	
2	Abies Smithiana	0	89	80½	35·36	Total height ... 82 feet.
		10	72			Ideal cylinder... 210·01 cubic feet
		20	66	69	26·31	Reducing factor 0·44
		30	63	64½	22·63	Age 80
		40	52	57½	17·95	Increase per cent. ... 1·25
		50	46	49	13·26	
		60	31	38½	7·97	
		70	20	25½	3·45	
			Total contents ...		126·93	

In front of House.

No. of trees.	Botanical name.	Length in feet.	Girth in inches.	Mean in inches.	Cubic contents.	
1	Abies Smithiana	0	69	69	26·31	Total height ... 114 feet.
		10	69			Ideal cylinder... 299·93 cubic feet.
		20	66	67½	24·80	Reducing factor 143·12
		30	60	63	21·93	Age 70
		40	56	58	18·59	Increase per cent. ... 1·43
		50	51	53½	15·52	
		60	45	48	12·73	
		70	38	41½	9·28	
		80	32	35	6·76	
		90	25	28½	4·33	
		100	16	20½	2·21	
		110	6	11	0·66	
			Total contents ...		143·12	

Back of House.

1	Ditto	0	90	85½	39·92	Total height
		10	81			Ideal cylinder
		20	75	78	33·62	Reducing factor
		30	68	71½	27·85	Age 237
		40	66	67	24·80	Increase per cent. ... 0·42
		50	63	64½	22·63	
		60	60	61½	20·56	
		70	51	55½	16·71	
		80	45	48	12·73	
		90	...	37½	15·18	
		100	30			
			Total contents ...		213·95	
2	Picea Webbiana	0	55	55	16·71	Total height ... 90 feet.
		10	55			Ideal cylinder... 150·45 cubic feet.
		20	53	54	16·11	Reducing factor 0·52
		30	48	50½	13·18	Age... 73
		40	44	46	11·69	Increase per cent. ... 1·37
		50	39	41½	9·28	
		60	34	36½	7·16	
		70	24	29	4·64	
			Total contents ...		78·77	

Dainkúnd.

1	Abies Smithiana	0	102	102	57·49	Total height ... 142 feet.
		10	102			Ideal cylinder... 821·41 cubic feet
		20	99	100½	55·26	Reducing factor 0·48
		30	96	97½	51·99	Age 310
		40	93	94½	48·82	Increase per cent. ... 0·32
		50	84	88½	42·79	
		60	81	82½	37·15	
		70	75	78	33·62	
		80	66	70½	27·07	
		90	54	60	19·89	
		100	42	48	12·73	
		110	36	39	8·40	
		120	24	30	4·97	
			Total	contents ...	400·18	

Dainkúnd.—continued.

No. of trees.	Botanical name.	Length in feet.	Girth in inches.	Mean in inches.	Cubic contents.		
2	Abies Smithiana	0	87	87	41·82	Total height ...	125 feet.
		10	87			Ideal cylinder...	522·83 cubic feet.
		20	78	82½	37·15	Reducing factor	0·49
		30	75	76½	31·91	Age	202
		40	73	74	30·26	Increase per °/₀	0·47
		50	72	72½	28·64		
		60	65	68½	25·55		
		70	60	62½	21·24		
		80	...	50	27·63		
		90	40				
		100	36	38	7·97		
		110	24	30	4·97		
		120	15	19½	1·99		
			Total contents ...		259·13		
3	Ditto	0	90	90	44·76	Total height ...	125 feet.
		10	90			Ideal cylinder...	559·52 cubic feet.
		20	87	88½	42·79	Reducing factor	0·52
		30	82	84½	38·99	Age	183
		40	78	80	35·36	Increase per °/₀	0·55
		50	...	73	58·89		
		60	68				
		70	62	65	23·34		
		80	56	59	19·23		
		90	...	46	21·04		
		100	36				
		110	32	34	7·66		
		120	22	27	4·02		
			Total contents ...		296·08		
4	Picea Webbiana	0	82	82	37·15		
		10	82			Total height ...	120 feet.
		20	79	80½	35·36	Ideal cylinder...	445·89 cubic feet.
		30	68	73½	29·44	Reducing factor	0·47
		40	66	67	24·80	Age	248
		50	63	64½	22·63	Increase per °/₀	0·41
		60	61	62	21·24		
		70	47	54	16·11		
		80	41	44	10·69		
		90	30	35½	6·76		
		100	22	26	3·73		
		110	14	18	1·79		
			Total contents ...		209·70		
5	Ditto	0	77	69	26·31		
		10	61			Total height ...	103 feet.
		20	58	59½	19·23	Ideal cylinder...	270·99 cubic feet.
		30	52	55	16·71	Reducing factor	0·42
		40	46	49	13·26	Age	1·92
		50	42	44	10·69	Increase per °/₀	0·52
		60	37	39½	8·40		
		70	36	36½	7·16		
		80	30	33	6·01		
		90	23	26½	3·73		
		100	14	18½	1·79		
			Total contents ...		113·29		
6	Ditto	0	72	72	28·64	Total height ...	120 feet.
		10	72			Ideal cylinder...	343·76 cubic feet
		20	69	70½	27·07	Reducing factor	0·48
		30	65	67	24·80	Age	195
		40	62	64	22·63	Increase per °/₀	0·51
		50	53	57½	17·95		
		60	48	50½	13·81		
		70	45	46½	11·69		
		80	36	40½	8·84		
		90	28	32	5·65		
		100	20	24	3·18		
		110	11	15½	1·24		
			Total contents ...		165·50		

Dainkúnd.—concluded.

No. of trees.	Botanical name	Length in feet.	Girth in inches.	Mean in inches.	Cubic contents.		
7	Picea Webbiana	0	80	74	30·26	Total height ...	108 feet.
		10	68			Ideal cylinder...	325·52 cubic feet.
		20	63	65⅛	23·34	Reducing factor	0·46
		30	60	61½	20·56	Age	223
		40	58	59	19·23	Increase per %	0·45
		50	54	56	17·33		
		60	51	52⅛	14·94		
		70	16	48½	12·73		
		80	39	42⅛	9·74		
		90	32	35½	6·76		
		100	21	26¼	3·73		
			Total contents ...		158·62		

CALCULATION OF CUBIC CONTENTS.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total number.	Average height	Reducing factor	Cubic contents.	
KALATOP.							
Ahliwal	23	3	8·64	...	...	...	Picea Webbiana.
	24	31	97·84				
	25	13	44·20				
	26	7	25·76				
	27	5	19·85				
	28	4	17·08				
	29	1	4·58				
	30	4	19·60				
	31	2	10 48				
	33	1	5 93				
	35	1	6 68				
	44	1	10·55				
	45	1	11·04				
	50	1	13·63				
TOTAL ...	...	75	295·36	95	0·49	13,749·01	183·32 per tree.
Ditto	25	1	3·40	...	...	...	Ditto dying.
	26	1	3 68				
	27	1	3 97				
	28	1	4·27				
	42	1	9·62				
	45	1	11·04				
TOTAL ...		6	35·98	95	0·49	1,674·87	279·14 per tree.
Compartment Ahliwal I ...	23	7	20·16	...	...	...	Abies Smithiana.
	24	6	18·84				
	26	1	3·68				
	27	1	3·97				
	28	1	4·27				
	30	5	24·50				
TOTAL ...	...	...	75·42	90	0·48	3,258·14	

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total number.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Jamádár, II ...	23	7	20·16	...	...	...	Cedrus Deodara.
	24	1	3·14				
	25	2	6·80				
	28	2	8·54				
	31	1	5·24				
TOTAL ...	...	...	43·88	80	0·40	1,404·16	
Ditto	23	1	2·88	...	...	...	Picea Webbiana.
	24	5	15·70				
	28	1	4·27				
TOTAL ...	...	41	22·85	80	0·48	877·64	135·12 per tree.
Compartment Bindrában, III	23	3	8·64	...	...	...	Cedrus Deodara.
	24	34	106·76				
	25	4	13·60				
	26	3	11·04				
	27	2	7·94				
	28	2	8·54				
	31	1	5·24				
	32	1	5·58				
	33	1	5·93				
	34	1	6·30				
TOTAL ...	...	...	179·57	95	0·42	7,164·84	
Compartment III, Bindrában III	23	1	2·88	...	...	...	Cedrus Deodara ; dying.
	25	1	3·40				
TOTAL ...	...	54	6·28	95	0·40	238·64	137·10 per tree.
Ditto	23	5	14·40	...	...	...	Picea Webbiana.
	24	37	116·18				
	25	12	40·80				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total number.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment III, Bindrában III	26	3	11·04	...	...	...	Picea Webbiana.
	27	2	7·94				
	28	4	17·08				
	30	7	34·30				
	31	1	5·24				
	32	7	39·06				
	35	1	6·68				
	36	4	28·24				
	40	2	17·44				
	42	1	9·62				
	48	1	12·56				
TOTAL ...	...	...	360·58	102	0·48	17,649·20	
Ditto	24	1	3·14	..	...	...	Ditto dying.
TOTAL ...	...	...	3·14	100	0·48	150·72	
Compartment Bindrában III	23	6	17·28	...	...	...	Abies Smithiana.
	24	50	157·00				
	25	5	17·00				
	26	3	11·04				
	27	6	23·82				
	28	4	17·08				
	29	6	27·48				
	30	7	34·30				
	31	1	5·24				
	32	8	44·64				
	34	2	12·60				
	35	2	13·36				
	36	3	21·18				
	37	1	7·46				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total number.	Average height.	Reducing factor	Cubic contents.	
KALATOP.							
Compartment Bindrában III	38	1	7·87	...	...	...	Abies Smithiana.
	39	1	8·29				
	40	2	17·44				
	44	1	10·55				
	50	1	13·63				
TOTAL ...	...	...	467·26	100	0·48	22,428·48	
Ditto	24	3	9·42	...	...	...	Ditto dying.
	25	1	3·40				
	27	1	3·97				
	32	2	11·16				
	34	1	6·30				
	35	1	6·68				
	36	1	7·06				
	37	1	7·46				
	39	1	8·29				
	50	1	13·63				
TOTAL ...	...	211	77·37	100	0·48	3,713·76	208·25 per tree.
Compartment Bandar IV ...	23	38	109·44	...	...	...	Cedrus Deodara.
	24	37	116·18				
	25	12	40·80				
	26	16	58·88				
	27	13	51·61				
	28	15	64·05				
	29	7	32·06				
	30	10	49·00				
	31	10	52·40				
	32	28	156·24				
	33	5	29·65				
	34	22	138·60				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total number.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Bandar IV ...	35	13	86·84	...	...	...	Cedrus Deodara.
	36	19	134·14				
	37	20	149·20				
	38	15	118 05				
	39	13	107·77				
	40	8	69·76				
	41	17	155 72				
	42	5	48·10				
	43	10	100·80				
TOTAL ...	...	...	1,869·89	90	0·42	73,681·84	
Ditto	23	2	5·76	...	...	...	Ditto dying.
	25	1	3·40				
	34	1	6·30				
	36	1	7·06				
	38	2	15·74				
	41	1	9·16				
TOTAL ...	...	...	48·16	80	0·42	1,618·18	
Ditto	23	43	123 84	...	...	...	Picea Webbiana.
	24	43	135·02				
	25	23	78·20				
	26	12	44·16				
	27	20	79·40				
	28	21	89·67				
	29	21	96·18				
	30	31	151·90				
	31	27	141·48				
	32	24	133·92				
	33	13	77·09				
	34	25	157 50				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total number.	Average height	Reducing factor.	Cubic contents	
KALATOP.							
Compartment Bandar IV ...	35	11	73 48				
	36	15	105 90				
	37	15	111 90				
	38	15	118 05				
	39	19	157 51				
	40	17	148 24				
	41	11	100 76				
	42	14	134 68				
	43	10	100 80				
	44	3	31 65				
	45	4	41 16				
	46	1	16 16				
	47	2	21 08				
TOTAL ...	...	...	2,505 73	100	0 48	1,20,275 01	
Ditto	26	1	3 68	...	. .	...	Ditto dying trees.
	32	3	16 74				
	34	1	6 30				
	49	2	26 18				
TOTAL ...	...	..	52 90	100	0 48	2,539 20	
Ditto	23	39	112·72	...	...	...	Abies Smithiana.
	24	71	222 94				
	25	41	139 40				
	26	26	95 68				
	27	31	123 07				
	28	32	136 64				
	29	16	68 70				
	30	31	151 90				
	31	18	94 32				
	32	28	156 24				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total number.	Average height.	Reducing factor.	Cubic contents.	
KALATOP							
Compartment Bandar IV ...	33	23	136 39				
	34	30	189·00				
	35	25	167 00				
	36	32	225·92				
	37	20	119·20				
	38	20	157 10				
	39	20	165 80				
	40	16	159 52				
	41	16	146·56				
	42	20	192 40				
	43	30	302·40				
	44	11	116 05				
	45	10	110·40				
	46	5	57 70				
TOTAL ...	...	...	3,575 35	102	0 48	1,75,049 14	
Ditto	26	2	7·36	..	..	...	Ditto dying trees.
	27	1	3 97				
	31	1	6 30				
	36	1	7·06				
TOTAL ...	...	...	24·69	100	0·48	1,185·12	
Compartment Bara Pathar V	23	4	11 52	...	...	...	Cedrus Deodara.
	24	7	21·98				
	26	1	3·68				
	28	1	4 27				
	30	8	39 20				
	34	1	6·30				
	39	2	16 58				
	41	1	9·16				
TOTAL ...	...	25	112·69	80	0·42	3,786·38	151·47 per tree.

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Bara Pathar V	24	3	9·42	...	...	...	Picea Webbiana.
	26	5	18·40				
	31	3	15·72				
	38	4	31·48				
TOTAL ...	...	...	75·02	90	0·48	3,240·86	
Ditto	24	10	31·40	...	...	...	Abies Smithiana.
	26	1	3 68				
	27	2	7·94				
	29	1	4·58				
	38	1	7·87				
	40	1	8·72				
TOTAL ...	...	...	64·19	90	0·47	2,715 24	
Ditto	24	2	6·28	...	...	...	Ditto dying trees.
TOTAL ...	...	33	6·28	90	0·47	265 64	188·53 per tree.
Compartment Deo ka Gulla VI	24	7	21·98	...	...	...	Cedrus Deodara.
	25	3	10·20				
	27	1	3·97				
	29	1	4·58				
	32	1	5·58				
TOTAL ...	...	...	46·31	80	0 42	1,754 72	
Ditto	25	1	3·40	..	...	...	Abies Smithiana.
TOTAL ...	...	...	3 40	80	0 47	127·84	
Compartment Ban Pahar VII	23	33	95 04	...	...	...	Cedrus Deodara.
	24	46	144·44				
	25	37	125·80				
	26	38	139·84				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Ban Pahar VII	27	41	162·77	...	...	...	Cedrus Deodara.
	28	22	93·94				
	29	21	96·18				
	30	13	63·70				
	31	4	20·96				
	32	15	83·70				
	33	7	41·51				
	34	10	63·00				
	35	4	26·72				
	37	4	29·84				
	41	1	9·16				
	44	2	21·10				
	46	2	23·08				
TOTAL ...	...	...	1,240·78	90	0·42	46,901·48	
Ditto	24	1	3·14	...	...	...	Cedrus Deodara dying trees.
	27	1	3·97				
	29	2	9·16				
	34	1	6·30				
	36	2	14·12				
TOTAL ...	...	307	36·69	80	0·42	1,232·78	156 per tree.
Ditto	23	16	46 08	...	...	...	Picea Webbiana.
	24	35	109 90				
	25	13	44 20				
	26	40	147·20				
	27	8	31·76				
	28	13	55·51				
	29	1	4·58				
	30	9	44·10				
	31	4	21·12				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Ban Pahar VII	32	2	11·16	...	...	...	Picea Webbiana.
	35	4	26·72				
	37	1	7·46				
	38	1	7·87				
	39	2	16·58				
	48	1	12·56				
TOTAL ...	...	...	586·84	98	0·49	28,180·60	
Ditto	24	1	3·14	...	...	...	Picea Webbiana dying.
	25	1	3·40				
	27	1	3·97				
	28	1	4·27				
	30	1	4·90				
	39	1	8·61				
TOTAL ...	...	...	28·29	90	0·45	1,145·74	
Ditto	23	25	72·00	...	...	...	Abies Smithiana.
	24	40	125·60				
	25	34	119·00				
	26	10	36·80				
	27	27	107·19				
	28	9	38·43				
	29	21	96·18				
	30	21	102·90				
	31	18	94·32				
	32	39	217·62				
	33	3	17·79				
	34	2	12·60				
	35	1	6·68				
	38	2	15·74				
	39	1	8·29				
	44	1	10·55				
TOTAL ...	...	...	10,81·69	90	0·48	46,729·00	

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total. No.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Bun Pahar VII	24	1	3·14	...	...	...	Dying trees.
	25	1	3·40				
	30	1	4·90				
	32	1	5·58				
TOTAL ...	...	414	17·02	90	0·47	719·94	185·44 per tree.
Compartment Gotri VIII ...	23	29	83·52	...	...	...	Cedrus Deodara.
	24	9	28·26				
	25	6	20·40				
	26	23	84·64				
	27	7	27·79				
	28	31	132·37				
	29	5	22·90				
	30	11	53·90				
	31	3	15·72				
	32	3	16·74				
	33	5	29·65				
	34	2	12·60				
	35	6	40·08				
	38	3	23·61				
TOTAL ...	...	...	592·18	90	0·42	22,384·40	
Ditto	23	1	2·88	...	...	...	Ditto dying trees.
	27	1	3·97				
TOTAL ...	...	145	6·85	80	0·42	244·54	156·06 per tree.
Ditto	23	5	14·40	...	...	...	Picea Webbiana.
	24	7	21·98				
	25	10	34 00				
	26	10	36·80				
	27	5	19·85				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents	
KALATOP.							
Compartment Gotri VIII ...	28	5	21 35				Picea Webbiana.
	29	14	64 12				
	30	3	14 70				
	31	8	41 92				
	32	1	5 58				
	33	4	23 72				
	34	4	25·20				
	35	5	33·40				
	37	2	14 92				
	40	3	26·16				
	44	2	21·10				
TOTAL ...	...	...	410·20	95	0·47	18,717·28	
Ditto	23	14	40·32	...	...	...	Abies Smithiana.
	24	14	43 96				
	25	15	51·00				
	26	15	55·20				
	27	11	43·67				
	28	18	76 86				
	29	6	27·48				
	30	10	49 00				
	31	11	57 64				
	32	12	66 96				
	33	5	29 65				
	34	5	31 50				
	35	2	13·36				
	40	2	17 44				
TOTAL ..	...	...	604 04	95	0 47	26,970 38	
Ditto	28	1	4 27	...	...	...	Ditto dying.
	30	1	4 90				
	32	1	5 58				
TOTAL ...	...	231	14 75	90	0 47	623 92	200 48 per tree.

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Matola IX ...	23	1	2·88	...	...	...	Cedrus Deodara.
	24	2	6·28				
	25	1	3·40				
	26	3	11·04				
	27	3	11·91				
	28	3	12·81				
	29	1	4·58				
	30	3	14·70				
	31	4	20·96				
	34	7	44·10				
	35	1	6·68				
TOTAL ...	...	...	139·34	80	0·42	4,681·82	
Ditto	27	2	7·94	...	...	...	Picea Webbiana.
	28	2	8·54				
	30	1	4·90				
	39	1	8·29				
TOTAL ...	...	...	29·67	95	0·47	1,325·06	
Ditto	24	1	3·14	...	...	...	Abies Smithiana.
	25	1	3·40				
	26	2	7·36				
	27	2	7·94				
	28	6	25·62				
	29	2	9·16				
	30	4	19·60				
	31	1	5·24				
	33	1	5·93				
	35	1	6·68				
TOTAL ...	...	...	94·07	95	0·46	4,110·86	

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total number.	Average height	Reducing factor	Cubic contents.	
KALATOP.							
Compartment Matola IX ...	27	1	3·97	...	...	...	Abies Smithiana dying.
	29	1	4·58				
TOTAL ...	...	...	8·55	90	0·46	353·97	
Compartment Kothi XIV ...	23	4	11·52	...	...	...	Cedrus Deodara.
	24	30	94·20				
	25	10	34·00				
	26	4	14·72				
	27	1	3·97				
	28	6	25·62				
	29	7	32·06				
	30	8	39·20				
	32	3	16·74				
	33	2	11·86				
	34	6	37·80				
	36	3	21·18				
	38	6	47·22				
	39	5	41·45				
	40	6	52·32				
	43	5	50·40				
	44	3	31·65				
	45	2	22·08				
TOTAL ...	...	...	587·99	90	0·42	22,226·02	
Ditto	26	3	11·04				Ditto dying.
	27	2	7·94				
	28	1	4·27				
	30	1	4·90				
	33	1	5·93				
	38	1	7·87				
TOTAL ...	...	120	41·95	85	0·42	1,497·62	197·69 per tree.

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Kothi XIV ...	23	2	5·76	...	...	...	Picea Webbiana.
	24	9	28·26				
	25	1	3·40				
	26	1	3·68				
	27	1	3·97				
	28	2	8·54				
	30	2	9·80				
	33	1	5·93				
	39	1	8·29				
	44	2	21·10				
TOTAL ...	...	...	98·73	98	0·46	3,450·75	
Ditto	24	1	3·14	...	...	...	Ditto dying.
	39	1	8·29				
TOTAL ...	...	...	11·43	90	0·46	473·20	
Ditto	23	9	25·92	...	...	...	Abies Smithiana.
	24	38	119·32				
	25	14	47·60				
	26	19	69·92				
	27	3	11·91				
	28	7	29·89				
	29	7	32·06				
	30	9	44·10				
	31	1	5·24				
	32	5	27·90				
	35	5	33·40				
	36	2	14·12				
	39	3	24·87				
	40	2	17·44				
	41	2	18·32				
	45	3	33·12				
TOTAL ...	...	...	555·13	95	0·47	24,786·55	

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Kothi XIV ...	24	3	9·42	...	...	...	Abies Smithiana dying.
	30	1	4·90				
	40	1	8·72				
TOTAL ...	...	158	23·04	90	0·47	974·59	187·75 per tree.
Compartment Zakhira XVI...	23	29	83·52	...	...	...	Cedrus Deodara.
	24	41	128·74				
	25	18	61·20				
	26	33	121·44				
	27	13	51·61				
	28	17	72·59				
	29	10	45·80				
	30	18	88·20				
	31	11	57·64				
	32	10	55·80				
	33	7	41·51				
	34	30	189·00				
	35	13	86·84				
	36	15	105·90				
	37	5	37·30				
	38	17	133·79				
	39	17	140 93				
	40	5	43 60				
	43	2	20·16				
	44	4	42·20				
	45	2	22·08				
	49	1	13·09				
TOTAL ...	...	...	1,642·94	95	0·42	65,553·31	
Ditto	23	2	5·76				Ditto dying.
	24	2	6·28				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Zakhira XVI...	25	1	3·40	...	...	...	Cedrus Deodara dying.
	26	3	11·04				
	27	1	3·97				
	28	1	4·27				
	29	1	4·58				
	33	2	11·86				
TOTAL ...	...	331	51·16	85	0·42	1,826·41	203·56 per tree.
Ditto	23	25	72·00	...	...	...	Picea Webbiana.
	24	34	106·76				
	25	26	88·40				
	26	26	95·68				
	27	25	99·25				
	28	24	102·48				
	29	22	100·76				
	30	6	29·40				
	31	16	83·84				
	32	15	83·70				
	33	7	41·51				
	35	8	53·44				
	36	3	21·18				
	37	2	14·92				
	38	4	31·48				
	40	14	122·08				
	41	1	9·16				
	42	3	28·86				
	43	4	40·32				
	44	4	42·20				
	45	1	11·04				
	46	5	57·70				
	47	1	12 04				
	48	3	37·68				
TOTAL ...	...	...	1,385·88	98	0·49	66,540·96	

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Zakhira XVI...	23	3	8·64	...	...	...	Picea Webbiana dying.
	24	5	15·70				
	25	3	10·20				
	26	5	18·40				
	28	3	12·81				
	29	2	9·16				
	30	2	9·80				
	31	2	10·48				
	33	1	5·93				
	34	1	6·30				
	36	2	14 12				
	38	2	15·74				
	40	1	8·72				
	43	1	10·08				
TOTAL ...	...	...	156·08	90	0·49	6,685 22	
Ditto	23	15	43·20	...	...	...	Abies Smithiana.
	24	42	131·88				
	25	44	149·60				
	26	22	80·96				
	27	15	59·55				
	28	22	93·94				
	29	3	13·74				
	30	11	53·90				
	31	2	10·48				
	32	13	72·54				
	33	4	23 72				
	34	8	50·40				
	35	16	106 88				
	36	1	7·06				
	37	8	59 68				
	38	7	55·09				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Zakhira XVI...	40	8	69·76	...	...	...	Abies Smithiana.
	41	1	9·16				
	42	1	9·62				
	43	2	20·16				
	44	9	94·95				
	48	1	12·56				
TOTAL ...	...	...	1,228·83	95	0·48	56,034·65	
Ditto	24	1	3·14	...	...	...	Ditto dying.
	25	4	13·60				
	27	2	7·94				
	28	1	4·27				
	29	1	4·58				
	30	1	4·90				
	31	2	10·48				
	32	1	5·58				
	34	1	6·30				
	35	1	6·68				
	36	1	7·06				
	37	1	7·46				
TOTAL ...	...	584	81·99	90	0·48	3,542·35	227·88 per tree.
Compartment Lodhra XVII	23	23	66·24	...	...	...	Cedrus Deodara.
	24	33	103·62				
	25	24	81·60				
	26	7	25·76				
	27	22	87·34				
	28	15	64·05				
	29	15	68·70				
	30	18	88·20				
	31	2	10·48				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Lodhra XVII...	32	9	50 22	...	...	—	Cedrus Deodara.
	33	9	53·37				
	34	14	88·20				
	35	5	33·40				
	36	13	91·78				
	37	12	89·52				
	38	2	15·74				
	39	8	66·32				
	40	7	61·04				
	41	8	73·28				
	43	10	100·80				
	45	2	22·08				
	48	4	50·24				
TOTAL ...	...	...	1,391·98	95	0·42	55,540·00	
Ditto	24	1	3·14	...	...	—	Ditto dying.
	28	3	12·81				
	29	1	4·58				
	31	1	5·24				
	32	1	5·58				
	33	1	5·93				
	34	2	12·60				
	35	1	6·68				
	36	1	7·06				
	38	1	7·87				
	40	3	26·16				
	41	1	9·16				
	42	1	9·62				
	44	1	10·55				
TOTAL ..	...	281	126·98	85	0·42	4,533·19	213·78

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Lodhra XVII...	23	18	51·84	...	...	...	Picea Webbiana.
	24	24	75·36				
	25	17	57·80				
	26	24	88·32				
	27	9	35·73				
	28	18	76·86				
	29	8	36·64				
	30	17	83·30				
	31	9	47·16				
	32	14	78·12				
	33	9	53·37				
	34	2	12·60				
	35	11	73·48				
	36	3	21·18				
	37	5	37·30				
	39	2	16·58				
	40	12	104·64				
	42	1	9·62				
	44	4	42·20				
	48	3	37·68				
TOTAL ...	...	...	1,039·78	98	0·48	48,911·25	
Ditto	24	2	6·28	...	...	...	Ditto dying.
	25	1	3·40				
	26	1	3·68				
	27	2	7·94				
	28	4	17·08				
	30	2	9·80				
	31	2	10·48				
	33	1	5·93				
	34	1	6·30				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Lodhra XVII...	36	1	7·06	...	...	...	*Picea Webbiana* dying.
	37	2	14 92				
	39	1	8 29				
TOTAL ...	...	...	101·16	90	0·48	4,370·11	
Ditto	23	22	63·36	...	...	...	*Abies Smithiana.*
	24	20	62·80				
	25	28	95·20				
	26	26	95·68				
	27	17	67·49				
	28	9	38·43				
	29	9	41·22				
	30	20	98 00				
	31	9	47·16				
	32	8	44·64				
	33	6	35·58				
	34	10	63·00				
	35	6	40·08				
	36	3	21·18				
	37	8	59 68				
	38	7	55·09				
	40	13	113·36				
	42	1	9 62				
	44	1	10·55				
	45	3	33·12				
	48	3	37·68				
	49	8	104·72				
	50	1	13·63				
	52	1	14·74				
	53	1	15·32				
	54	1	15·90				
TOTAL ...	...	...	1,297·23	95	0·49	60,386·06	

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
CompartmentLodhra XVII...	23	2	5·76	...	...	...	Abies Smithiana.
	24	1	3·14				
	25	2	6·80				
	26	1	3·68				
	27	1	3·97				
	29	5	22·90				
	31	2	10·48				
	32	1	5·58				
	33	2	11·86				
	35	2	13·36				
	36	3	21·18				
	39	1	8·29				
	40	5	43·80				
	41	2	18·32				
	44	3	31·65				
TOTAL ...	...	504	210·77	90	0·49	9,294·96	243 97
Compartment Phal Lodhra XVIII.	23	2	5·76	...	...	...	Cedrus Deodara.
	24	4	12·56				
	25	5	17·00				
	26	11	40·48				
	27	3	11·91				
	28	2	8·54				
	29	1	4·58				
	30	6	29·40				
	33	1	5 93				
	34	2	12·60				
	35	1	6·68				
	38	1	7·87				
TOTAL ...	...	...	163·31	85	0·42	5,830·17	

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Phal Lodhra XVIII	24	1	3·14	...	...	...	Cedrus Deodara dying.
TOTAL ...	...	...	3·14	80	0·42	105·60	
Ditto	23	6	17·28	...	...	...	Picea Webbiana.
	25	4	13·60				
	29	4	18·32				
	30	4	19·60				
	31	2	10·48				
	32	3	16·74				
	33	2	11·86				
	35	3	20·04				
	36	2	14·12				
	37	1	7·46				
	38	1	7·87				
TOTAL ...	...	...	157·37	90	0·47	6,656·75	
Ditto	23	9	25·92	...	...	...	Abies Smithiana.
	24	1	3·14				
	25	4	13·60				
	26	4	14·72				
	27	2	7·94				
	29	1	4·58				
	30	15	73·50				
	31	2	10·48				
	32	3	16·74				
	33	1	5·93				
	35	5	33·40				
	36	3	21·18				
	38	1	7·87				
	41	1	9·16				
TOTAL ...	...	...	248·16	90	0·48	10,720·51	

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Phal Lodhra XVIII	25	1	3·40	...	...	...	Abies Smithiana dying.
	39	1	8·29				
TOTAL ...	...	...	11·69	85	0·48	476·95	
Compartment Gote XXI ...	23	1	2·88	...	...	...	Cedrus Deodara.
	24	12	37·68				
	25	11	37·40				
	26	2	7·36				
	27	6	23·82				
	29	3	13·74				
	30	2	9·80				
	33	3	17·79				
	36	4	28·24				
	38	2	15·74				
	39	1	8·29				
	41	2	18·32				
	42	1	9·62				
TOTAL ...	...	...	230·68	85	0·42	8,235·28	
Ditto	26	5	08·40	...	...	...	Picea Webbiana.
	28	7	29·89				
	29	3	13·74				
	30	2	9·80				
	31	1	5·24				
	36	6	42·36				
	37	2	14·92				
	38	1	7·87				
	39	1	8·29				
	40	1	8·72				
	41	3	27·48				
	42	3	28·86				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Gote XXI .	43	2	20·16	...	...	...	Picea Webbiana.
	44	3	31·65				
	45	1	11·04				
	46	1	11·54				
	47	1	12·04				
TOTAL ...	...	...	302·00	90	0·47	12,774·60	
Ditto	23	2	5·76	...	...	...	Abies Smithiana.
	24	1	3·14				
	25	2	6·80				
	29	3	13·74				
	31	6	31·44				
	32	2	11·16				
	35	7	46·74				
	40	2	17·44				
	41	1	9·16				
TOTAL ...	...	...	145·40	90	0·48	6,281·28	
Compartment Kálatop XXII	23	69	198·72	...	...	...	Cedrus Deodara.
	24	129	405·06				
	25	96	326·40				
	26	66	242·88				
	27	62	246·14				
	28	59	251·93				
	29	22	100·76				
	30	48	235·20				
	31	19	99·56				
	32	18	100·44				
	33	28	166·04				
	34	32	201·60				
	35	32	213·76				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Kálatop XXII	36	5	35·30	...	...	...	Cedrus Deodara.
	37	8	59·68				
	38	3	23·61				
	39	8	66·32				
	40	23	200·56				
	43	1	10·08				
	44	4	42·20				
	45	1	11·04				
	47	1	12·04				
TOTAL ...	...	...	3,249·32	98	0·42	1,33,742·01	
Ditto	23	2	5·76	...	...	...	Ditto dying.
	24	3	9·42				
	25	4	13·60				
	26	2	7·36				
	29	1	4·58				
	31	1	5·24				
	32	1	5·58				
	33	1	5·93				
	37	1	7·46				
	38	1	7·87				
	39	1	8·29				
	40	1	8·72				
	44	2	21·10				
TOTAL ...	...	754	110·91	90	0·42	4,192·40	183·93.
Ditto	23	75	216·00	...	...	...	Picea Webbiana.
	24	134	420·76				
	25	102	346·80				
	26	79	290·72				
	27	65	258·05				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Kálatop XXII	28	89	380·03	...	...	...	Picea Webbiana.
	29	61	279·38				
	30	117	582·30				
	31	43	225·32				
	32	77	429·66				
	33	30	177·90				
	34	30	188·00				
	35	45	300 60				
	36	16	112·96				
	37	12	89·52				
	38	20	157·36				
	39	16	132·64				
	40	64	558·08				
	41	21	192·36				
	42	5	48·10				
	43	3	30·24				
	44	14	147·70				
	45	3	33·12				
	46	1	11·54				
	47	3	36·12				
	48	1	12·56				
	49	1	13·09				
	50	5	68·15				
	55	1	16·49				
	56	1	17 10				
TOTAL ...	...	...	5,773 65	95	0·49	2,68,763·41	
Ditto	24	6	18·84	...	...	...	Ditto dying.
	25	4	13·60				
	26	3	11·04				
	27	1	3·97				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Kálatop XXII	28	2	8·54	...	...	...	Picea Webbiana dying.
	29	1	4·58				
	30	2	9·80				
	31	1	5·24				
	32	9	50·22				
	33	1	5·93				
	35	3	20·04				
	36	1	7·06				
	37	1	7·46				
	38	2	15·74				
	40	5	43·60				
	41	1	9·16				
TOTAL ...	...	...	234·82	90	0·48	9,928·22	
Ditto	23	54	154·52	...	...	...	Abies Smithiana.
	24	213	669·82				
	25	125	425·00				
	26	112	412·16				
	27	70	277·90				
	28	113	482·51				
	29	35	160·30				
	30	83	406·70				
	31	42	220·08				
	32	35	195·30				
	33	47	278·68				
	34	34	212·20				
	35	35	233·80				
	36	24	169·44				
	37	15	111·90				
	38	5	39·35				
	39	9	74·61				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
KALATOP.							
Compartment Kálatop XXII	40	29	252·88	...	...	...	Abies Smithiana.
	41	11	100·76				
	42	4	38·48				
	43	3	30·24				
	44	3	31·65				
	45	2	22·08				
	46	1	11·54				
	47	1	16·12				
	48	1	12·56				
	50	4	54·52				
	52	1	14·74				
	53	1	15·32				
TOTAL ...	...	...	5,097·92	94	0·48	2,39,810·96	
Ditto	23	2	5·76	...	...	...	Ditto dying.
	24	2	6·28				
	25	4	13·60				
	27	6	23·82				
	28	2	8·54				
	29	3	13·74				
	30	2	9·80				
	31	1	5·24				
	32	1	5·58				
	34	1	6·30				
	35	2	13·36				
	38	1	7·87				
	40	1	8·72				
	42	1	9·62				
	46	1	11·54				
	48	1	12·56				
TOTAL ...	...	2,317	162·33	90	0·48	7,012·66	226·79 per tree.

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
DIANKUND.							
Compartment Deoka Pani XXIII	23	70	201·60	...	...	...	Cedrus Deodara.
	24	81	254·34				
	25	76	258·40				
	26	78	287·04				
	27	56	222·32				
	28	52	222·04				
	29	56	256·48				
	30	67	328·30				
	31	52	272·48				
	32	18	100·44				
	33	17	100·81				
	34	25	157·50				
	35	14	93·52				
	36	32	225·92				
	37	13	96·98				
	38	8	62·96				
	39	12	99·48				
	40	14	122·08				
	41	3	27·48				
	44	2	21·10				
TOTAL	...	...	3,411·27	90	0·42	1,28,946 00	
Ditto	24	5	15·70	...	...	...	Ditto dying.
	26	3	11·04				
	27	3	11·91				
	28	1	4·27				
	29	2	9·16				
	30	1	4·90				
	31	1	5·21				
	32	2	11·16				
	35	2	13·36				
TOTAL ...	...	766	86·74	85	0·42	3,096·62	172·37 per tree.

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
DIANKUND.							
Compartment Deokapani XXIII	23	48	138·24	...	...	...	Picea Webbiana.
	24	83	260·62				
	25	77	261·80				
	26	59	217·12				
	27	30	119·10				
	28	62	264·74				
	29	14	64·12				
	30	54	264·60				
	31	23	120 52				
	32	28	156·24				
	33	22	130·46				
	34	36	226·80				
	35	41	273·88				
	36	16	112·96				
	37	12	89·52				
	38	11	86 57				
	39	16	132·64				
	40	33	287·76				
	41	21	192·36				
	42	15	144·30				
	43	19	191·52				
	44	8	84·40				
	45	5	55·20				
	46	2	23·08				
	48	3	37·68				
	49	1	13·09				
	50	21	286·23				
	53	1	15·32				
TOTAL ...	...	...	4,249·87	105	0·45	2,00,806·36	

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
DIANKUND.							
Compartment Deokapani XXIII	23	1	2·88	...	...	...	Picea Webbiana dying.
	24	2	6·28				
	26	2	7·36				
	28	1	4·27				
	30	2	9·80				
	32	4	22·32				
	34	2	12·60				
	35	3	20·04				
	37	2	14·92				
	39	2	16·58				
	40	9	78·48				
	48	1	12·56				
	50	3	40·89				
TOTAL ...	...	...	248·98	100	0·45	11,204·10	
Ditto	23	72	207·36	...	...	...	Abies Smithiana.
	24	89	279·46				
	25	60	204·00				
	26	59	217·12				
	27	62	246·14				
	28	31	132·37				
	29	22	100·76				
	30	56	274·40				
	31	21	110·04				
	32	30	167·40				
	33	25	148·25				
	34	13	81·90				
	35	26	173·68				
	36	17	120·02				
	37	13	96·98				
	38	8	62·96				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
DIANKUND.							
Compartment Deokapani XXIII	39	8	66·32	...	...	...	Abies Smithiana.
	40	12	104·64				
	41	6	54·96				
	42	12	115·44				
	43	3	30·24				
	44	5	52·75				
	45	1	11·04				
	46	1	11·54				
	49	1	13·09				
	50	4	54·52				
	54	2	31·80				
	55	1	16·49				
TOTAL ...	...	...	3,185·67	120	0·48	1,83,494·59	
Ditto	23	2	5·76	...	...	...	Ditto dying.
	24	3	9·42				
	25	2	6·80				
	26	5	18·40				
	28	3	12·81				
	30	2	9·80				
	32	3	16·74				
	33	1	5·93				
	34	2	12·60				
	37	2	14·92				
	40	1	8·72				
TOTAL ...	...	1,481	121·90	110	0·48	6,436·32	271·39 per tree.
DIANKUND.							
Compartment Kajlota XXIV	23	17	48·96	...	...	...	Cedrus Deodara.
	24	59	185·26				
	25	12	40·80				
	26	21	77·28				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
DIANKUND.							
Compartment Kajlota XXIV	27	14	55·58	...	...	...	Cedrus Deodara.
	28	21	89·67				
	29	24	109·92				
	30	21	102·90				
	31	10	52·40				
	32	19	106·02				
	33	6	35·58				
	34	7	44·10				
	35	3	20·04				
	36	2	14·12				
	37	2	14·92				
	38	11	86·57				
	40	8	69·76				
	41	1	9·16				
	43	1	10·08				
	45	1	11·04				
	46	2	23·08				
	48	1	12·56				
TOTAL ...	...	...	1,219·80	90	0·42	46,108·44	
Ditto ... — ...	23	2	5·76	...	...	...	Ditto dying.
	24	3	9·42				
	26	1	3·68				
	28	2	8·54				
	30	1	4·90				
	32	1	5·58				
	41	1	9·16				
	50	1	13·63				
TOTAL ...	...	275	60·67	85	0·42	2,165·92	175·54 per tree.

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
DIANKUND.							
Compartment Kajlota XXIV	23	47	135·36	...	...	...	Picea Webbiana.
	24	164	514·96				
	25	75	255·00				
	26	66	242·88				
	27	25	99·25				
	28	73	311·71				
	29	22	100·76				
	30	62	303·80				
	31	38	199·12				
	32	51	284·58				
	33	42	249·06				
	34	22	138·60				
	35	25	167·00				
	36	17	120·02				
	37	15	111·90				
	38	30	236·10				
	39	11	91·19				
	40	31	270·32				
	41	3	27·48				
	42	6	57·72				
	43	10	100·80				
	44	1	10·55				
	45	2	22 08				
	46	1	11·54				
	48	1	12 56				
	49	1	13·09				
	50	3	40·89				
	60	1	19·63				
TOTAL ...	...	...	4,147·65	110	0·48	2,18,995·92	

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
DIANKUND.							
Compartment Kajlota XXIV	24	7	21·98	...	...	...	Picea Webbiana dying.
	25	3	10·20				
	26	1	3·68				
	28	5	21·35				
	30	3	14·70				
	32	4	22·32				
	33	2	11·86				
	34	2	12·60				
	35	2	13·36				
	40	3	26·16				
	45	1	11·04				
TOTAL ...	...	...	169·25	100	0·48	8,124·00	
Ditto	23	53	152·64	...	...	...	Abies Smithiana.
	24	112	351·68				
	25	81	275·40				
	26	58	213·44				
	27	55	218·35				
	28	75	320·25				
	29	32	146·56				
	30	50	245·00				
	31	47	246·28				
	32	56	312·48				
	33	35	307·55				
	34	38	239·40				
	35	39	260·52				
	36	9	63·54				
	37	17	126·82				
	38	1	7·87				
	39	13	107·77				
	40	43	374·96				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
DIANKUND.							
Compartment Kajlota XXIV	41	30	274·80	...	...	...	Abies Smithiana.
	42	5	48·10				
	43	1	10·08				
	44	1	10·55				
	45	1	11·04				
	46	1	11·54				
	48	1	12·56				
	50	5	68·15				
TOTAL ...	...	...	4,417·33	110	0·49	2,38,094·09	
Ditto	23	2	5·76	...	...	...	Ditto dying.
	24	1	3·14				
	26	1	3 68				
	27	3	11·91				
	28	1	4·27				
	30	1	4·90				
	32	2	11·16				
	33	2	11·86				
	34	2	12·60				
	35	2	13·36				
	36	3	21·18				
	41	1	9·16				
TOTAL ...	...	1,758	112·98	100	0·49	5,536·02	267·77 per tree.
DIANKUND.							
Compartment Had Ban XXV	23	54	155·52	...	...	...	Picea Webbiana.
	24	124	389·36				
	25	46	156·40				
	26	81	298·08				
	27	45	178·65				
	28	77	328·79				
	29	58	265·64				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
DIANKUND.							
Compartment IIad Ban XXV	30	96	407·40	...	...	...	Picea Webbiana.
	31	55	288·20				
	32	82	457·56				
	33	37	219·41				
	34	16	100·80				
	35	56	374·08				
	36	23	162·38				
	37	23	171·58				
	38	10	78·70				
	39	9	74·61				
	40	64	558·08				
	41	4	36·64				
	42	8	76·96				
	43	2	20·16				
	44	7	73·85				
	45	5	55·20				
	46	2	23·08				
	47	1	12·04				
	48	4	50·24				
	50	12	163·56				
	53	1	15·32				
	54	3	47·70				
TOTAL.	...	1,005	5,302·99	110	0·95	2,72,398·00	
Ditto	24	4	12·56	...	...	...	Ditto dying.
	25	2	6·80				
	26	4	14·72				
	28	5	21·35				
	29	1	4·58				
	30	4	19·60				
	32	6	33·48				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
DIANKUND.							
Compartment Had Ban XXV	33	1	5·93	...	...	...	Picea Webbiana dying.
	34	1	6·30				
	35	2	13·36				
	36	3	21·18				
	37	1	7·46				
	38	1	7·87				
	39	3	24·87				
	40	7	61·04				
	41	1	9·16				
	47	1	12·04				
	52	1	14·74				
TOTAL ...	...	48	297·04	100	0·48	13,366·80	
Ditto	23	32	92·16	...	...	...	Abies Smithiana.
	24	44	138·16				
	25	80	272·00				
	26	12	44·16				
	27	43	170·71				
	28	26	111·02				
	29	39	178·62				
	30	42	205·80				
	31	40	209·60				
	32	25	139·50				
	33	32	189·76				
	34	20	126·00				
	35	21	140·28				
	36	13	91·78				
	37	16	119·36				
	38	2	15·74				
	39	4	33·16				
	40	11	95·92				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
DIANKUND.							
Compartment Had Ban XXV	42	2	19·24	...	...	...	Abies Smithiana.
	43	1	10·08				
	44	3	31·65				
	45	1	11·04				
	47	2	24·08				
	50	3	40·89				
	51	1	14·18				
	54	1	15·90				
	55	1	16·49				
TOTAL ...	...	517	2,557·28	120	0·48	1,47,299·33	
Ditto	24	1	3·14	....	...	...	Ditto dying.
	25	1	3·40				
	29	1	4·58				
	30	1	4·90				
	33	1	5·24				
	35	1	6·68				
TOTAL ...	...	6 (15·76)	27·94	100	0·48	1,475·23 (1,34,539·36)	275 72
DIANKUND.							
Compartment Bawáni Devi XXVI	23	56	161·28	...	...	...	Picea Webbiana.
	24	144	452·16				
	25	68	231·20				
	26	82	301·76				
	27	67	265·99				
	28	117	499·59				
	29	53	242·74				
	30	79	387·10				
	31	51	267·24				
	32	88	379·44				
	33	50	296·50				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
DIANKUND.							
Compartment Bawáni Devi XXVI	34	52	327·60	...	...	...	Picea Webbiana.
	35	50	334·00				
	36	20	141·20				
	37	20	149·20				
	38	17	133·79				
	39	14	116·06				
	40	49	427·28				
	41	3	27·48				
	42	3	28·68				
	43	1	10·08				
	44	2	21·10				
	48	3	37·68				
	50	2	27·26				
TOTAL ...	...	1091	5,266·59	110	0·45	2,60,696·20	
Ditto	23	2	5·76	...	...	...	Picea Webbiana dying.
	24	4	12·56				
	25	6	20·40				
	26	3	11·04				
	27	1	3·97				
	28	2	8·54				
	29	1	4·58				
	30	6	29·40				
	31	1	5·24				
	32	6	33·48				
	33	3	17·79				
	34	3	18·90				
	38	1	7·87				
	40	1	8·72				
TOTAL ...	...	40	188·25	100	0·45	8,471·25	

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
DIANKUND.							
Compartment Bawáni Devi XXVI	23	39	112·32	...	...	...	Abies Smithiana.
	24	97	304·58				
	25	53	180 20				
	26	55	202·40				
	27	61	254·08				
	28	43	183·61				
	29	31	141 98				
	30	65	318·50				
	31	37	193·88				
	32	28	156·21				
	33	37	219·41				
	34	31	195·30				
	35	18	120·24				
	36	15	105 90				
	37	9	67·14				
	38	9	70·83				
	39	11	91·19				
	40	34	296 48				
	41	14	128 24				
	42	15	144 30				
	43	3	30·24				
	44	2	21·10				
	45	2	22·08				
	46	1	11 54				
	48	8	100·48				
	50	6	81·78				
	60	2	39·26				
TOTAL ...	...	729	3,793·30	120	0·48	2,18,494·08	

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
DIANKUND.							
Compartment Bawáni Dovi XXVI	23	2	5·76	...	...	...	Abies Smithiana dying.
	24	3	9·72				
	25	2	6·80				
	26	2	7·36				
	27	1	3·97				
	28	2	8·54				
	29	2	9·16				
	31	1	5·24				
	37	1	7·47				
	38	1	7·87				
	40	2	17·44				
	41	1	9·16				
	42	1	9·62				
	43	1	10·08				
	50	1	13·63				
TOTAL ...	...	23 (1883)	131·52	110	0·48	6,944·26 (4,94,605·79)	262·66 per tree.
DIANKUND.							
Compartment Inferanwála XXVII	23	49	141·12	...	...	...	Picea Webbiana.
	24	68	213·52				
	25	33	112·20				
	26	32	117·76				
	27	27	107·19				
	28	36	111·02				
	29	13	59·54				
	30	39	191·10				
	31	17	89·08				
	32	28	156·24				
	33	7	41·51				
	34	18	113·40				
	35	13	86·84				
	36	10	70·60				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
DIANKUND.							
Compartment Inferanwála XXVII	37	7	52·22	...	...	...	Picea Webbiana.
	38	5	39·55				
	39	6	49·74				
	40	15	130·80				
	41	2	18·32				
	42	1	9·62				
	43	1	10·08				
	44	8	84·40				
	45	2	22·08				
	49	1	13·09				
TOTAL ...	...	438	2,083·72	110	0·45	1,11,030·49	
Ditto	24	1	3·14	...	...	...	Ditto dying.
	27	1	3·97				
	28	1	4·27				
	29	1	4·58				
	30	2	9·80				
	31	1	5·24				
	35	1	6·68				
TOTAL ...	...	8	37 68	100	0·45	1,695·60	
Ditto	23	28	80·64	...	...	...	Abies Smithiana.
	24	39	119·46				
	25	19	64·60				
	26	16	58·88				
	27	18	71·46				
	28	15	64 05				
	29	9	41·22				
	30	18	88 20				
	31	4	20·96				

CALCULATION OF CUBIC CONTENTS—CONTINUED.

Block, Compartment, and Area.	Diameter.	No. of trees.	Basis of Total No.	Average height.	Reducing factor.	Cubic contents.	
DIANKUND.							
Compartment XXVII Inferanwála	32	11	58·66	...	...	...	Abies Smithiana.
	33	11	62·08				
	34	6	37 80				
	35	15	100·20				
	36	6	46·36				
	37	8	59·64				
	38	5	39·35				
	39	2	16·58				
	40	11	95·92				
	42	2	19·24				
	44	2	21·10				
	46	1	11·54				
	48	2	25·12				
	50	1	13·63				
TOTAL ...	...	219	1,216·69	120	0·48	7,0081·34	
Ditto	24	4	12·56	...	...	...	Ditto dying.
	25	2	6·80				
	28	1	4·27				
	29	3	13·74				
TOTAL ...	...	10 (695)	37·37	110	0·48	1,973·14 (1,81,780·57)	265·87 per tree.

STATEMENT OF RIGHTS.

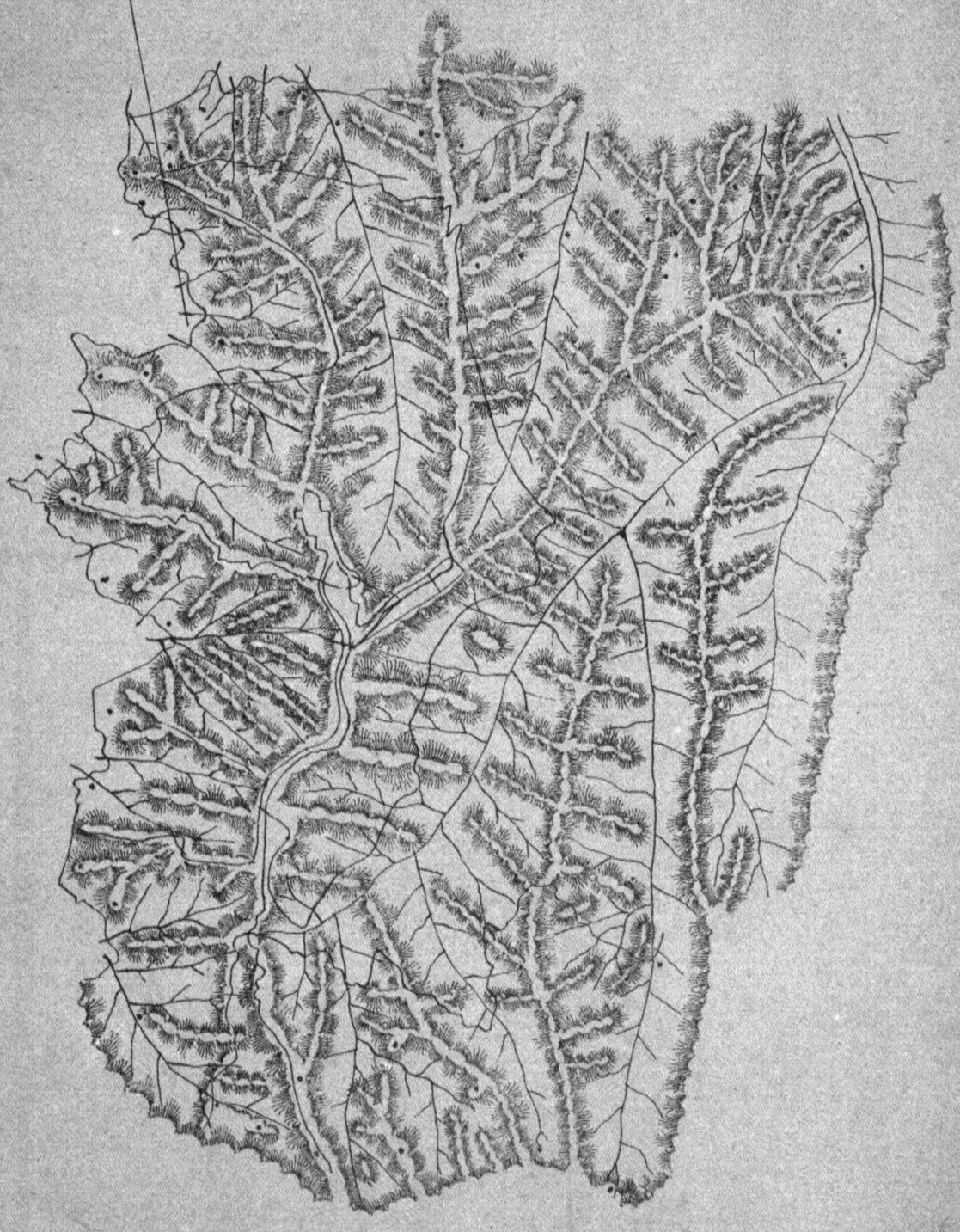
No. of village or right-holder.	Name of village or right-holder.	Area of village in acres.	Area of common land kept for grazing, &c.	Area of unreserved forest available for village.	Population.	Number of houses.	Number of heads of cattle.	Particulars of forest rights and privileges as originally claimed.
1	Village Kokela.	...	...	...	25	3	70 cows, 200 goats and sheep.	Grazing, grass, Oak leaves. Building wood, fire-wood. Green wood for fires at marriages in the Kalatop block.
2	Village Doda.	...	...	...	15	4	60 cows, 100 sheep.	Unlimited grazing in Kalatop. Cutting grass through the whole of the forest. Timber for building Dry wood for fire-wood and green wood for fires at marriages. Oak leaves for fodder.
3	C iota Lodra	...	...	...	15	3	40 cows, 20 sheep.	Unrestricted grazing and grass cutting through the whole forest. Oak leaves for winter fodder. Timber for building. Dry wood for fire-wood. Green wood for fires at marriages.
4	Dhil ...	...	...	...	10	2	40 cows, 20 sheep.	Unrestricted grazing and grass cutting through the whole forest. Oak leaves for winter fodder. Timber for building; dry-wood for fire-wood. Green wood for fires at marriages.
5	Bara Lodra	...	...	...	60	10	140 cows, 400 sheep and goats.	Unlimited grazing and grass supply through the whole forest. Oak leaves for winter fodder Timber for building. Dry wood for fire-wood. Green wood for fires at marriages.
6	Jagrota ...	...	...	...	...	...	...	Unlimited grazing and grass supply through the whole forest. Oak leaves for winter fodder. Timber for building. Dry wood for fire-wood. Green wood for fires at marriages.

Whether determined by Court of law, commission, agreement or otherwise.	Actual requirements of village or right-holder.	Rights as ultimately adjusted.	Remarks.
Agreement between Conservator and Superintendent of Chamba, of 1871.	Restricted grazing and grass in parts of the forest. Cutting of Oak leaves for winter fodder, dry wood and building timber.. Green wood for fires at marriages. Abundent supply of grass in the village land.	For 70 cows grazing and grass in all unfenced forests in the Kalatop block. Dry wood, but not of dry standing trees. Building timber only on application to the Officer in charge of the Circle. Grazing for 200 goats and sheep against tirni.	When the privileges were enquired into, there were present— *Zemindars* Bhola, Mantu, and Joda. Sherú Vakil, and undersigned.
Agreement between Conservator and Superintendent of Chamba, 1871.	Grazing and grass over a portion of the block. Cutting Oak leaves for winter fodder, dry fire-wood and building timber.	Grazing for 60 cows, and the right to cut grass in all unreserved forests in the Kalatop block. Dry wood lying on the ground. Building timber on application to the Officer in charge. Grazing for 100 goats and sheep against tirni.	Zemindars present: Laba, Vakil, Jesso, and Kazi. Oak leaves were not considered necessary by Colonel Reid.
Agreement between Conservator of Forests and Superintendent of Chamba, 1871.	Restricted grazing and grass through the whole forest. Oak leaves for winter fodder. Timber for building under restriction. Dry wood for fire.	Grazing for 40 cows in unreserved compartments of Kalatop block. Grass through all unreserved compartments. Dry wood on the ground for fire-wood. Timber on application to the Officer in charge. Grazing for 20 sheep against tirni.	Present at enquiry: Dhil, Bolaki, and Sama.
Agreement between Conservator of Forests and Superintendent of Chamba, 1871.	Restricted grazing and grass through the whole forest. Oak leaves for winter fodder. Timber for building. Dry wood for fire.	Grazing for 40 cows in all unreserved portions of Kalatop. Grass through all unreserved compartments. Dry wood when lying on the ground. Timber on application to the Officer in charge. Grazing for 20 goats and sheep against tirni.	Present: Dhil, Zemindar.
Agreement between Conservator of Forests and Superintendent of Chamba, 1871.	Restricted grazing and grass supply. Oak leaves through a limited portion of the forest. Dry wood for fire-wood. Timber for building.	Grazing for 140 cows in the unreserved compartments, as well as cutting of grass. Dry wood for fire-wood in unreserved forest when lying on the ground. Timber on application to the Officer in charge. Grazing for 400 goats and sheep against tirni.	Present: Laba, lambardar.
Agreement between Conservator of Forests and Superintendent of Chamba, 1871.	The village does not require any of those rights, as they have waste land enough.		

No. of village or right-holder.	Name of village or right-holder.	Area of village in acres.	Area of common land kept for grazing, &c.	Area of unreserved forest available for village.	Population.	Number of houses.	Number of heads of cattle.	Particulars of forests rights and privileges as originally claimed.
7	Bamrota ...	...	...	...	14	3	45 cows, 300 own 300. Rajah } Sheep.	Unrestricted grazing and grass, dead wood and timber.
8	Shama ...	...	...	...	9	2	24 cows. 25 goats and sheep.	Unrestricted grazing and grass. Dead wood and timber in the whole forest.
9	Samua ...	....	...	...	2	1	7 cows ...	Unlimited grazing and cutting grass. Dead wood and timber.
10	Gaddis, Udra, Kina, and Lala, of village Bathri.	...	...	...	...	...	...	Claim unrestricted. Grazing right through the whole forest against paying of a tax.
11	Gujars, Fazla and Narmaj.	...	...	...	...	...	...	Claim unrestricted. Right of grazing through the whole forest.
12	16 Gujars *Headmen*; Lala Din, Muhammad Din, Jola, and Bahadar.	...	...	...	...	...	...	Claim right of grazing through the block Diankund with unlimited amount of cattle. At present 500 cows and buffalos.
13	His Highness the Rajah of Chamba.	...	...	...	...	...	...	Claims right to all taxes levied on grazing from the abovementioned villages, Gujars and gaddis.
14	His Highness the Rajah of Chamba.	...	...	...	...	...	...	Claims right of conservancy of all trees within 200 feet of the Chumba roads.

Whether determined by Court of law, commission, agreement or otherwise.	Actual requirements of village or right-holder.	Rights as ultimately adjusted.	Remarks.
Agreement between Colonel Reid and Conservator of Forests, 1871.	Limited right to grazing and grass. Dead wood and timber under restriction.	Grazing for 47 cows through the unreserved compartments, as well as grass-cutting. Dead wood in the same when lying on the ground. Timber on application to the Officer in charge. Grazing for 600 goats and sheep against tirni.	
Agreement between Colonel Reid and the Conservator of Forests, 1871.	Limited right of grazing and grass. Dead wood and timber under restriction.	Grazing for 47 cows in the unreserved compartments, as well as grass and dead wood when lying on the ground. Timber on application to the Officer in charge. Grazing for 25 goats and sheep against tirni.	
Agreement between Conservator of Forests and Superintendent of Chamba, 1871.	Restricted right of grazing and grass in unreserved compartments, as well as the dead wood in them when lying on the ground. Timber if really wanted.	Grazing for 7 cows in unreserved compartments, and cutting of grass and firewood if lying dead on the ground. Timber for building on application to, and at the discretion of, the Officer in charge.	
Agreement as above.	Right of grazing in unreserved forest for the present amount of cattle.	Right to graze in the unreserved compartments—37 buffalos, 110 sheep and goats against a tax.	
Agreement between Conservator of Forests and Superintendent of Chamba, 1871.	Right of grazing through unreserved portions of the forest for the present amount of cattle.	Grazing through the unreserved compartments for 30 buffalos against paying a tax.	
Agreement of Conservator and Superintendent of Chamba, 1871.	No grazing wanted.	None allowed.	
"	"	None.	
New Chamba lease.	"	Will be considered.	

MAP
OF
KALATOPE
FOREST



Scale 2 Inches = 1 Mile

1000 500 0 1000 2000 3000 4000 5000 6000 7000 8000 feet

PART II.

Descriptive part.

A. General. Working arrangements.

1 General task of this Working Plan

The aim of the present working plan is to regulate the utilization of the Kálatop Forest in such a manner as to secure an equal and steady supply of wood, and to improve the condition of the forest. It will show how much wood of each kind may be taken out of the forest without endangering the future supply; securing at the same time a reproduction and proper treatment of the forest.

The plan shows only the quantity that can be cut without reference to the market, though some few remarks are made concerning the sale of products.

I have borne in mind that it is of greater importance to make a sensible plan for utilization and cultivation, so as to bring the forest in such condition as to give its yield the highest "economic" value, than to ascertain the increase with the utmost accuracy, and to make intricate calculations for future yield.

Even in the High forest (Hoch Wald) all our calculations, though based on facts, depend to a certain degree on chances which it is impossible to foresee, and all this uncertainty is greatly multiplied in a forest cut by selection, especially if the selections are made by the purchasers, who have no interest in the well being and improvement of the forest.

This happened at Kálatop; and the very irregular forest described in Part I was the result. I regard therefore any attempt to calculate future yield (further than for a short period) simply as a waste of time.

I have pictured to myself the whole forest in an ideal condition; and it has been my endeavour to propose a system of treatment which, according to our present knowledge, will by degrees lead to such improvements as may ultimately bring the forest in the ideal condition which I have designed.

I have considered it throughout the duty of Government to treat the Kálatop forest on such principles as if it belonged permanently to Government, and not as a leased forest.

It should be our aim to obtain the most valuable produce for the people, and an uninterrupted supply in preference to the realization of the greatest amount of money.

I have also kept in view :—

1. To grow such trees as are at present considered of the greatest value for Government and private buildings.

2. To limit the utilization of minor products as little as possible, and to support the people to our utmost power by allowing grazing, the collection of dry wood, &c.

3. To utilize the present stock in hand as equally as possible, or, in one word, to work as "conservatively" as possible.

Selection of treatment, kind of wood, kind of forest, time of rotation.

Though the present treatment, viz, cutting by selection (provided this selection be well managed and supervised), has many advantages, such as a greater power of resisting atmospheric influences, &c., &c., &c., the disadvantages connected with this system outweigh the advantages.

If the forest is kept too dense, the simultaneous growth of trees of all ages and heights will impede a free circulation of air through the forest. This and the permanent shade to which the young growth is necessarily subjected, renders it puny and stunted. Even mature trees cannot shake off the pernicious influence of a neglected youth.

This is the reason why we see in Kálatop trees of the same diameter but of entirely different ages (Bindra Ban and Bandar). If we attempt to neutralize the above named drawbacks by means of a more severe cutting, and allow the young growth the benefit of air and light, we allow at the same time the damaging influences of these agents to take their effect on the soil.

The growth of shrubs, weeds, and a general deterioration of the soil is the result. Nearly every compartment in Kálatop exhibits those symptoms (See Part I).

Under the selection system, it is difficult to preserve young growth against the mischievous effects of cattle grazing; great damage must always also accrue from the utilization of material.

Cutting, logging, sawing, bringing out of timber, etc., etc.

The yield in such a forest is uncertain, and the whole management difficult to supervise. In my opinion, Kálatop shows sufficient proofs of the disadvantages of cutting by selection to make a

change desirable, and the principles I expressed lead me to select the "mixed High forest with clear cutting."

This treatment will yield the most valuable timber. The young growth compartments may, after a certain time, be opened for grazing without fear of endangering the young trees, as they will all be of a uniform age.

The working is simple and easy to supervise, and the reproduction is safer, as the soil is steadily improving, whereas it is reduced under the system of "cutting by selection."

The low Oak and Rhododendron forests of a few of the lower compartments, as well as all blanks, ought to be included in the "High forest" treatment. In fact, Kálatop must in time be converted into a "High forest," in the literal sense of the word.

Selection of species of trees.

I said a "mixed High forest." In most of the compartments there will be a mixture of Cedrus Deodara, Abies Smithiana, Picea Webbiana and some Deciduous trees, but the mixture will vary with the external conditions.

Wherever it is possible, wherever elevation and soil will permit, wherever I expect a superior result from the cultivation of deodar, I endeavour to make it the predominant tree; but, at the same time, I shall never propose to try and force its cultivation on, in my opinion, uncongenial places.

For instance, in the Dainkúnd compartments Hadban, Balani Devi, and Jufianwala, above the Dalhousie road, I shall mix only "Abies Smithiana" and "Picea Webbiana," and I expect from these trees in the above named locality a better yield, both as regards kind and money, than from a mixture of deodar. In the compartments Doda, Kukéla, Sin, and part of Matola, which are, without doubt, best adapted for Pinus longifolia, I would consider it wrong to attempt to grow any thing else, at least in the first instance, before the soil is improved.

Thus much as regards the selection of the chief species of trees to be cultivated. I do not intend to exclude the intermixture of any other indigenous or foreign tree which may succeed; on the contrary, I recommend the cultivation of the more valuable deciduous trees.

Time of rotation.

It would be presumptuous to fix a time of rotation for a "High forest" which has as yet to be created.

Our business is as yet with the *time* in which the proposed change into a High forest is to be accomplished; and here all speculations based on theory must give way to a practical judgment.

I may mention that, according to many experiments, 100-120 years will under ordinary conditions suffice for the growth of a first class tree of either species.

Time of transformation and division in periods.

The calculation of the length of time in which the transformation is to be brought about is based on the present state of the forest, as well as the expectations of reproduction; and though the reduced state of the forest would make it profitable to shorten this time as much as possible, there are other reasons why we should be careful not to give way to this consideration.

We must bear in mind to distribute the stock in hand equally, so as to provide the market. We must also go safely to work as regards reproduction and cultivation, and our aim must be to create a High forest of all age classes.

After taking all these conflicting reasons into consideration, I fixed the time for a complete transformation at 100 years.

I divide the 100 years into five equal periods of 20 years each, over which the utilization and cultivation of the different compartments are distributed, according to the principles laid down in a table which will be found a little further on.

Beginning of Working Plan.

The first year of the Working Plan will be 1873-74.

The utilization in 1872-73 should be limited to the clearing of the forest of actually dead trees in the Dainkúnd compartments, and thinnings and cultivations should be executed, as proposed, under the heading of "Immediate works," sent to the officer in charge.

B. Principles on which the working plan is based, with reference to utilization, cultivation, and general rotation.

As I said above, the working plan is based on a scheme by which the present forest is to be transformed into a High forest in a space of time extending over 100 years. The compartments are distributed over that period, according to principles laid down in the following table:—

Table showing on what principles the compartments are distributed over the periods;—

1st Period 1873 to 93	*Clear cutting and cultivation.* Thinning.	Cutting of dead trees only.	Clearing of dead trees, thinning and filling blanks.	Cutting of old trees, filling up blanks; thinning.	Repeated clearing out of 1st and 2nd Period.
2nd Period 1893-1913	Thinning.	*Clearing and cultivation.* Thinning.	...	Thinning.	
3rd Period 1913-33	Thinning.	Thinning.	*Clearing and cultivation.* Thinning.	...	Thinning.
4th Period 1933-53	...	Thinning.	Thinning.	*Clearing and cultivation.* Thinning.	...
5th Period 1953-73	...	...	...	...	*Clearing and cultivation.*
	Compartments will complete 1st class forest, blanks, or blanks with single standard trees, and Rhododendron forest.	Compartments with a great amount of second class wood and few first class trees.	Compartments with second and third class trees mixed.	Compartments with 3rd and 4th class trees, intermixed with few thickets and standard trees.	Compartments with thickets, thickets with blanks and standard trees. Compartments cultivated with quick growing trees during the 1st Period.

One look at the distribution form will suffice to show the amount of ill usage to which the forest had been subjected in former times. The 1st class contains ten *bonâ fide* blank compartments.

The arrangement of the compartments is based on a combination of area and contents; but, owing to the irregularity of the forest and to the many blanks, the table exhibits not only a corresponding irregularity of area, but also a want of equality of yield of material. At the end of the time of transformation, the area of forest from 80 to 100 years will be considerably prevailing, but as the trees will be young and in full growth, it will be an easy task to distribute the surplus over the 2nd age class, and to found, within 20 or 30 years, a perfectly classified forest with a rotation time of 100 or, better, 120 years.

Clearing.

I have fixed the selection of the area to be cut yearly for the 1st ten years only. After the first decennary, I leave it to the judgment of the officer in charge to make the yearly selection from the area and material set apart for each period.

The subject I kept in view in selecting the yearly area was again reproduction, equal supply, and the utilization of deteriorating material.

By "reproduction" I understand the new growth of the most valuable material. Thus, I would be inclined to preserve an old deodar seed tree if all other trees around it were felled.

I propose to fell first such mature forests as have most severely suffered either from fires, wounding for resin, or climatic influences, and to keep back such as have a more healthy appearance, as it must always be one of our first considerations to cover the soil as quickly as possible with a healthy forest.

Again, for the sake of reproduction, I have made the areas for cutting comparatively narrow and small. This affords protection to the young growth against atmospheric influences, prevents consequent mischief by insects, and checks the deterioration of the soil. Another advantage is that many a natural seedling will be produced by the adjacent trees.

Regulating the cutting.

The number of cuttings proposed depends partly on the expediency of having small clear cuttings, partly on the irregularity of the forests as regards age, growth and health, and partly also on the formation of the area.

I endeavoured to begin clear cuttings always on places not exposed to the full fury of storms and snows; and on places where I was forced to cut, but did not consider perfectly safe, I left a protective belt.

The "direction lines" (Hiebestour) of cuttings are of great importance, and it has been my endeavour to make them in such a manner as to protect the cuttings against the inclemencies of the weather.

Consideration of rights by selection of cuttings.

The rights of the people have to be taken into consideration, but it will be an impossibility to reculitivate the blanks or transform the forests entered in the 1st Period under existing circumstances. There will be, if those rights continue to be exercised in their present form, no necessity of closing the whole area entered in the 1st Period; but, as soon as an area is to be cultivated

or recultivated, it becomes necessary to close it strictly, and only to reopen it when the young plants have outgrown all attendant danger.

It is hardly necessary to close the compartments entered in the 2nd and 3rd Period, and many of those in the 1st Period might remain open until their turn of cultivation comes round. At the same time, I would not advise to reopen any of the once fenced in compartments. Dainkúnd, however, with the exception of the new cuttings, might be thrown open in exchange for the areas to be cultivated, recultivated, and transformed, in such compartments which are as yet burdened with the right of grazing.

At the beginning of the transformation, we must use the utmost discretion as regards the granting of rights, so as to enable us to be truly liberal hereafter.

After the forest has been once restocked, it is contrary to my opinion to prevent the people from exercising their rights. The right of grazing, so dangerous to a forest cut by selection, in which every compartment is in a state of reproduction, is much less damaging to a High forest with reproduction distributed over a certain area.

If Kalatop once becomes a High forest, as I intend it to do, it will be sufficient to close about $\frac{1}{8}$ of the entire forest, or less than the 4th part of the present preserve.

In selecting the cutting area and cutting lines, I was enabled to utilize the areas without endangering reproduction already in progress, either by the felling, working up, or export.

Nearly all our hill forests show glaring instances of this omission. The want of a system, as regards the laying down of a practical line of cutting, has been productive of double mischief: the cuttings were guided either by contractors (as in Kalatop) who had a personal interest in the matter, or by untrained Forest Officers, who took a pride in showing that they had utilized the forest at the least possible expense.

They all endeavoured to select the most valuable trees as close as possible to the export lines. We find therefore that forests which have reproduced themselves close above roads or rivers are now to be cut *above* this young growth. The material will, of course, have to be taken through the young thickets. It is impossible to calculate how many young saplings and how many thousands of seedlings are destroyed by felling and logging of big trees standing in a partly reproduced forest. The condition of most of our forests confirms an axiom which, as far as I know, has never been mentioned in

any of our existing forest reports or memoranda, and which seems to have been only partly understood, viz:—"That the fixing of the amount of material a forest can yield (even if, this amount be within the present yielding power of the forest) is no guarantee whatsoever for a lasting yield." But true conservancy depends even more on the "manner" of utilization,—a manner by which the material cut is at once reproduced in the safest and most practical way, by which the reproduction is, if possible, multiplied, and by means of which the forest is brought into such a condition as would enable us to execute all improvements as quickly and as advantageously as possible.

Cultivation.

We have to resort to artificial cultivation to recultivate the clear cuttings, to cultivate deodar in the Oak forest, to cultivate blank compartments, and to replenish incomplete young growth. I look upon natural reproduction only as an auxiliary in ruined pine forests. Artificial reproduction must be our great stand-by.

Species.

It is not difficult to select the species for artificial reproduction. Our choice must fall on Cedrus Deodara, Abies Smithiana and Picea Webbiana, and, in some of the lower compartments, Pinus longifolia. Of course, deodar, as the most valuable tree must always take precedence, but I recommend, nevertheless, an intermixture of the above named trees. In the first instance, they are more hardy, and do not suffer so severely during transplanting as the deodar. They may serve as a passing protection to soil and young growth, and may be cut out at the time of the thinnings, leaving a more or less unmixed deodar forest, or at least a forest in which the deodar is the prevailing tree. I recommend also the intermixture of valuable deciduous trees, and even the Oak I would largely intermix on the more arid places.

Way of cultivation.

It is difficult to lay down a strict method of cultivation, but I should say that in most cases planting will be preferable to sowing.

In the Forest Conference paper, for 1871-72, page 22-38, many interesting data were given as to deodar planting, and though perhaps the very cheapest and most practical method has not yet been hit upon, it has been incontrovertibly proved that, with a certain amount of care, we have succeeded wherever we tried to do so.

I believe that it will be found most advantageous to raise all three species of pines in nurseries, and transplant strong single nursery plants in preference to those taken out

of the forest, which have probably been accustomed to a better shade and protection than we would in most cases be able to afford them.

For planting of blank compartments, or clear cuttings, this method of cultivation should be strictly adhered to. Planting the deodar at ten feet quincunx, I would interplant them with Abies Smithiana and Picea Webbiana, according to the requirements of the places, or even plant only a mixture of Abies Smithiana and Picea Webbiana at five feet quincunx, or Pinus longifolia at the same distance.

In the Oak forest of compartment Shama, and between the high Indigofera thickets and other shrubs, transplanting is again the only legitimate way.

In the former I propose a severe cutting and lopping during one season (so as to prepare the soil), and planting during the following spring with deodar, and on a few arid places with Pinus longifolia. The Oak left on the ground will protect the young deodar, and will keep the ground moist and prevent deterioration. They may be cut out if a deodar thicket begins to form.

As the deodar now growing up amongst the Oak show a good and healthy growth, I would, wherever possible, plant deodar without any intermixture. It will be necessary to make some deodar nurseries for this cultivation on a lower elevation, and nearer to the places which are to be planted than the existing nurseries.

I would apply the same principles to the cultivation amongst shrubs, viz. · to destroy, by means of cutting, the pernicious influence of the dense cover, and to use the modified shade for protection. Replenishing also should be done by transplanting. But, besides planting, the Forester in charge should, immediately after cutting an area, dibble seed into all places loosened in the process of cutting and dragging the timber, &c. This entails but little expense and care, and may cheapen the next year's cultivation considerably.

I am not quite certain whether sowing or planting will be the most advantageous method for the cultivation of Pinus longifolia, but there is no doubt that both methods answer well with a tree so easily reproduced. Even protection alone has in many places (Hazára) insured a good reproduction. But to insure success by protection alone, we require more seed trees than we have in Kukéla and Doda. We are, therefore, forced to resort to artificial reproduction.

Sowing will, of course, be our first care, but I strongly recommend the speedy laying out of nurseries, as I am of opinion that planting will again be found to answer best.

In the first instance, I propose to prepare small places (*pots*) at five feet quincunx. These places ought only to be a foot square, and dug only 4" to 6" inches deep, taking care that the top layer of soil remains on the surface. The lower soil is too raw and not sufficiently decomposed to suit the requirements of seed and seedlings. In each of these places I propose to dibble 8-10 well selected seeds. I would wish that for transplanting, yearlings, as well as two year old plants, should be used.

I would recommend that the most complete notes be made of all cultivations, with a detailed history of the progress.

As far as forest conservancy is concerned, "*Experientia docet*" is only then true, when the acquired experience is noted down, and the successor can continue to build on the foundations raised by his predecessor.

The nurseries already established at Kálatop are, though very central, neither sufficiently large nor close enough to all places about to be planted. The cost of transport to the Dainkúnd compartments and all the lower compartments would be very great.

Another drawback is the elevation of our largest nursery.

I should like to see foreign trees introduced in many of the lower compartments, as well as species of the more valuable trees of this country; but I am afraid that the elevation on which our present nurseries are established is too high for many of them.

Eucalyptus, Rhus, &c.

Taking all this into consideration, I am induced to propose the laying out of three more nurseries of considerable extent, as well as a few smaller and scattered ones, on likely places, to be selected by the Officer in charge.

I propose a nursery at Dainkúnd on a level place in compartment Balani Devi, just above the Chamba road, solely for the raising of Picea Webbiana and Abies Smithiana.

I should like to lay out another nursery on the ridge forming the boundary between Lodra and Doda for Pinus longifolia, some foreign trees and deodar. The third nursery I propose to establish in Jugrota compartment for deodar, and species of new trees to be introduced.

A few smaller nurseries should be made for the lower compartments. In all nurseries the raising of the more valuable Deciduous trees should never be neglected.

The budget for the cultivation during the first period will be found on pages 286 and 287.

The budget is based on the area entered under A I. in the table of working, and on calculations of cost of cultivation.

The large expenditure under the head of "cultivation" during the 1st period is a penalty we will have to pay in all hill forests of the Panjáb for workings without rules and principles.

I calculate the expenditure of artificial cultivation as follows :—

	Rs.	A.	P.
Seed 80 lbs. ...	1	0	0
Preparation and training per acre of seed nurseries, including the removal of stumps ...	50	0	0
Sowing ...	2	0	0
Clearing of weeds first year ...	4	0	0
Transplants, 40,000 plants @ 6 annas per thousand	15	0	0
Clearing of weeds second year ...	4	0	0
ditto third year ...	4	0	0
Planting, 40,000 plants @ Rs. 3 per thousand with artificial manuring	120	0	0
40,000 plants	200	0	0

Or about 2,000 per acre at Rs. 25 per acre.

In all nurseries the raising of the more valuable Deciduous trees should never be neglected.

Improvements and Protection.

Making and preserving of roads and fences.

If Kálatop were at the present moment a High forest with clear cuttings, I would propose an extensive system of export roads; but, with the exception of Dainkúnd, no compartment could be burdened with the expenses of a new road, and we must therefore be satisfied to preserve the existing roads, and only make slight alterations and improvements, such as a level road round the hill in compartment Jamadár. This and other small improvements should be covered by a fixed annual sum.

Fences.

As yet, it is still desirable to fence any preserved part of the forest, though a considerable expense will accrue therefrom. The budget for this item is calculated on the area to be fenced annually, and the present rates of fencing. I have calculated it over the whole of the 1st period. The present rates of fencing I consider too high; cheaper arrangements should be made.

For the preservation of fences I have set apart a yearly sum.

Protection.

The protection of the forest against fires is one of our chief duties under this heading. The first step is, not to allow fire of any kind into the forest during the months of March, April, May, June, October and November; or, what is better still, to allow no fires at any time. A high fine should be levied on a transgression of this order. Forest laborers may be allowed to have a fire in mud huts, on places pointed out to them.

I propose to cut immediately clear lines of 32 feet breadth between all compartments, and they should always be kept clear of dry wood and young growth.

The insects, which are the bane of an irregular forest, (they have done a great amount of damage in Kálatop, as may be seen in Part I) can only be diminished through a regular course of good forestry. If we raise only healthy trees, the insects, which prefer attacking diseased trees, will soon leave the forest.

Destruction of breeding places and protection of birds are also means of getting rid of the insects.

No refuse should be allowed to remain unbarked in the forest, and dead and dying trees should be removed as soon as possible.

A high fine should rest on killing any other but game birds in the Kálatop forest in any season, and game birds in any other months but September, October and November. All birds which live in hollow trees are the greatest enemies of insects, during their different phases of existence.

Even now there is a scarcity of breeding places for birds at Kálatop, and when the old and diseased trees are removed, the birds will have no breeding places left. I propose, therefore, to try to attract more of these birds to Kálatop by preparing artificial breeding places for them.

Small houses of unprepared slabs and other refuse nailed on the trees have answered well in Europe. The birds learn soon that these houses are no traps, and will build readily in them. The material costs nothing, with the exception of a few nails, and a carpenter can make six or eight a day, so that 500 of these breeding houses will cost not more than about Rs. 50, which, after a few years, will amply repay itself.

We have to guard against other mischievous influences, such as heavy snow-drifts and storms. A judicious treatment of the forest, such as careful cuttings, correct direction of the

cuttings, and careful, frequent and lenient thinnings of the young thickets, are the only protective measures at our command against such dangers.

All this has already been enumerated and taken into careful consideration in the laying out of the working plan.

Protection against trespass.

The worst kind of trespass has already been effectually stopped. It is no longer possible, as of old, for contractors to obtain an indent for a certain number of trees and, on the strength of it, to cut and waste to whatever extent they felt inclined.

Fences are a protection against grazing in the reserved parts of the forest, but there is still much to be done (see Part I), and that by an inadequate establishment. I propose to employ three *strictly* protective Chaprásís (not orderlies) besides the Múnshi. Each of these men is to have a beat—one in Dainkúnd block, the two others in Kálatop. They must inspect their beats daily, and report whatever has occurred twice a week, or whenever they meet the Múnshi or any other officer. Officers, as well as Múnshis, should make frequent tours of inspection, and note down every thing of importance.

Besides this fixed establishment, I propose to empower the working mates and a number of chosen coolies to inform against trespassers, and I would encourage them to do so by allowing them half of the fines levied.

D. Yield and utilization of the material.

This chapter contains the expected probable yield of material, and I have added a few necessary remarks concerning the manner of utilizing the Forest range.

Part I contains a list of all trees above 13 inches diameter. Calculation of 1st class pattern trees, with calculation of Reducing Factor and increase per cent., and a calculation of the cubic contents of all first class trees, enumerated in the compartments.

The total number of trees enumerated in the Forest range Kálatop is as follows :—

Names and description of trees.	1st class above 23 inches.	2nd class from 18 inches to 22 inches.	3rd class from 13 inches to 17 inches.	
Cedrus Deodara ... ... Good	3,430	3,190	5,038	
" ... ... Dying	114	56	64	
Picea Webbiana ... ... Good	6,731	3,737	4.321	
" ... ... Dying	282	92	75	
Abies Smithiana ... ... Good	6,004	4,125	5,450	
" ... ... Dying	203	88	57	
Deciduous trees of sorts ... ... Good	2,146	1,505	1,817	
" ... ... Dying	174	104	84	
Oak ... ... Good	1,058	587	762	
" ... ... Dying	102	51	45	
Chil ... ... Good	31	...	...	

This number would allow us to fell annually, according to the old system, 800 pine trees, or 300 deodar and 500 other pines, not counting oaks and other Deciduous trees; but worked according to a rational plan, this yield must, and will, differ materially.

The only compartments entered for clear felling in the 1st period with 4,134 pine trees (Abies Smithiana and Picea Webbiana) (see proposals for cutting, pages 282, 283 and 284) are compartments 25, 26 and 27. The table showing proposed clearings of old trees in the first period in such compartments as fall in subsequent periods show 567 deodar and 2,435 other pines for the first decennary, and 666 deodar for the second decennary. The total number of trees, therefore, to be felled during the first 20 years is 1,233 deodar and 6,569 Abies Smithiana and Picea Webbiana, or 7,802 pine trees of sorts, allowing a yearly cutting of 390 trees.

I have calculated the yield of these trees for the 1st decennary without taking into consideration the increase, as a greater portion of the trees to be cut are either over-grown or diseased. Trees that have ceased to increase and are now deteriorating, are also included in that category. During the second decennary I add the calculated increase of the 1st class trees for five years, or the middle of the decennary.

2,457 1st class deodar and 6,690 1st class Abies Smithiana and Picea Webbiana have been set apart for the use of future periods.

I have not calculated the yield for future time, for reasons explained in a former part. The statement of cubic contents of all 1st class trees is given more as an exposition of the "capital value" of mature timber in the forest than for any other practical purposes.

Kálatop contains at present :—

		Sawn timber and planks @ 50 per cent	Fuel and slabs @ 28 per cent.	Small fuel and residue @ 22 per cent.	Total.
Cedrus Deodara . .	Good	320,845 14	179,673 28	141,171 86	641,690 28
„ . ..	Dying	11,213 38	6,275 50	4,933 89	22,426 77
Picea Webbiana . ..	Good	842,524·24	471,813 57	370,710 67	1,685,048 48
„	Dying	34,892 90	19,540 02	15,352 88	69,785·80
Abies Smithiana	Good	768,372 34	430,288 51	338,083 83	1,536,744 68
„	Dying	25,328 43	14,183 93	11,144 51	50,656 87

This amount, together with the Deciduous trees, is the ideal value of the forest, if we could cut and sell all the timber and fuel at once.

I have omitted fire-wood as well as Deciduous trees in my present yield calculations, but it will be easy to add these calculations from the observations contained in Part I, should we succeed in opening a market for fire-wood or to make and sell charcoal at a profitable price.

As regards the stability of the market, I can only quote the amount of wood used in former years, and rely on the gradual increase of the Sanitaria.

Should the demand diminish, the utilization of first and second class trees must be extended over a greater space of time, and the rotation lengthened ; should the demand increase only momentarily, the compartments on Dainkúnd may be cut in advance of the year entered in the Working Plan, provided, however, the cultivation keeps pace with the cuttings.

In my opinion, the method of cutting trees up in the forest adopted during the last two years, should be adhered to and systematically arranged.

If the cubic contents of the tree is measured by the Officer in charge as soon as it is felled, misappropriation of material is hardly possible. .

Another great point to be kept steadily in view by the Officer in charge is the opening of a fuel market, or profitable manufacturing of charcoal, to get rid of the fuel of the pine trees, as well as to dispose of the Deciduous trees.

Though I could not enter an Income derivable from these sources, I inserted the preliminary notes in Part I, and it will be easy to calculate on this basis.

Minor-Income.

I could not enter any yield from minor produce, as it is not settled who is to be the recipient of sums derived therefrom—Government or the Chamba State.

It is unnecessary to offer here any remarks as regards the Income.

The table of Income, Expenditure and Balance in favor of period and year will explain itself. After the 1st period, the cost of cultivation and fencing will not be more than half the amount calculated for that period.

TABLE OF WORKING.

AREA.					EXISTING FOREST.							
NAME.		Area.		Relative goodness of soil, places, &c.	Age.	Mixed forest.					Other forests.	
						Over 80 years.	Over 60 years.	Over 40 years.	20–40 years.	1–20 years.		
		Acre.			Years.	Acre.					Species.	Acre.
I. Ahliwal	... 102·65	a	39	75	0·5	100	...	...	...	...	...	...	...
		b	62	90	0·4	∞	...	...	...	...	...	...	...
II. Jamadar	... 77·74	...	77	74	0·4	∞	...	...	...	...	...	...	...
III. Bindraban	... 70·50	...	70	50	0·6		...	...	...	...	70·50	...	...
IV. Bandar	... 80·40	a	68	10	0·6	80	68·10	...	...	...	...	...	...
		b	10	00	0·5	100	...	...	...	...	...	...	...
		c	2	30	0·0	...	...	...	...	...	...	...	...
V. Bara Pathar	... 60·48	...	60	48	0·5		...	...	...	...	60·48	...	...
VI. Dooka Galla	... 115·89	a	102	89	0·4	∞	...	...	...	...	...	...	...
		b	13	...	...	...	...	...	...	...	...	...	...
VII. Ban Pahar	... 85·00	...	85	00	0·6	all ages 1—120	...	...	85·00	...	...	...	...
VIII. Gotri	... 82·90	...	82	90	0·6		...	...	...	...	82·90	...	...
IX. Matola	... 100·75	...	100	75	0·4 and 0·5	∞	...	...	...	...	...	...	...
X. Sia	... 48·36	...	48	36	0·5 0·6	∞	...	...	...	...	...	...	...
XI. Sarni	... 111·75	...	111	75	0·7		...	...	...	111·75	...	...	...
XII. Shama	... 88·80	...	88	80	0·7	∞	...	...	...	...	...	Oak and Rhododendron.	88·80
XIII. Bangrota	... 101·21	...	101	21	0·7		...	...	101·21	...	...	...	...
XIV. Kothi	... 102·50	...	102	50	0·7		...	...	102·50	...	...	...	...
XV. Jagrota	... 115·60	...	115	60	0·6 0·7		...	...	...	...	115·60	...	...
XVI. Zakhira	... 108·25	a	2	75	0·8	...	...	...	105·50	...	...	...	...
		b	105	50	0·7								
XVII. Lodra	... 58·75	...	58	75	0·6		...	58·75	...	...	...	...	...
XVIII. Pale Lodra	... 122·30	...	122	30	0·6	∞	...	...	...	...	...	...	...
XIX. Kukela	... 131·85	...	131	85	0·7	∞	...	...	...	...	...	...	...
XX. Doda	... 95·65	...	95	65	0·7	∞	...	...	...	...	...	...	...

PROPOSALS.

Blanks.	I Period. I Decennary.	I Period. III Decennary.	II Period.	III Period.	IV Period.	V Period.	REMARKS.
Acre.	*Acre.*						
39·75 62·90	48·00 Cl.	48·00 Cl.	....	... ...	... ...	... ...	Clearing of all 1st class trees, and such which are not likely to live through the rotation, cultivate C. D., A. S., and P. W.
77·74	38·87	38·87	...	...	...	...	Cultivate by planting C. D., A. S., and P. W.
...	Cl. T. B. 16·00	T	...	...	...	70·50	Clear old trees out wherever wanted for young growth; repairing blanks with transplants C. D., A. S., and P. W.
... 10·00 ...	... ...	... 10·00 ...	68·10	... ...	... ...	... ...	Plant C. D., A. S., and P. W.
...	Cl. T. B 20·00	T	...	...	...	60·48	Clearing of old trees and repairing blanks at once, with C. D., A. S., and P. W. thinnings.
102·89 ...	... 51·00 ...	... 51·00 ...	... ...	... ...	... ...	... ...	Transplants C. D., A. S., P. W., P. L., deciduous trees, &c.
...	Cl. T. B 10·00	...	...	75·00	...	...	Cleaning of all deteriorating, topsore and dry trees. Thinning and filling up blanks C. D., A. S., P. W., and deciduous.
...	Cl. T. B 30·00	...	...	...	...	82·90	Cutting of all 1st class trees. Planting C. D., A. S., P. W., and P. L.
100·75	50·00	50·00	...	...	...	...	Ditto.
48·36	24·00	24·00	...	...	...	...	Ditto.
...	T. B. 25·00	...	... ...	...	86·75	...	Ditto.
...	44·00	44·00	...	...	...	...	Changing from Oak and Rhododendron into deodar forest.
...	T. R. 20·00	...	...	81·21	...	...	Replenishing C. D. thinning.
...	R. 10·00 Cl. T.	...	...	92·50	...	...	Cutting of deteriorating trees only. Thinning, filling up of 10 acres of blanks.
...	R. 20·00 T. Cl.	...	...	...	...	115·60	Cutting 1st class trees; immediate thinning; planting of blanks, C. D., &c.
...	R. 20·00 T. Cl.	...	...	85·50	...	...	Cutting deteriorating trees. Repairing with plants C. D., A. S., P. W., and P. L.
...	T. Cl.	...	...	...	58·75	...	Clearing, planting.
122·30	61·00	61·00	...	...	...	...	Planting with mixed trees like preliminary proposals.
131·85	65·00	65·00	...	...	...	...	Cultivation with P. L.
95·65	47·00	47·00	...	...	...	...	Ditto.

AREA.					EXISTING FOREST.							
NAME.	AREA.		Relative goodness of soil, places, &c.	Age.	MIXED FOREST.					Other forests.	
					Over 80 years.	Over 60 years.	Over 40 years.	20–40 years.	1–20 years.		
	Acre.			*Years.*	*Acre.*					*Species.*	*Acre.*
XXI. Gotri ... 132·25 ...	132	25	0·7	8	...	...	...	...	...	...	...
XXII. Kalatop ... 132·23 ...	132	23	0·8	8	...	132·23	...	...	...	...	...
XXIII. Deoka Pani ... 203·05 ...	203	05	0·7	...	...	...	203·05	...	...	...	...
XXIV. Kajlota ... 197·80 ...	197	80	0·7	...	140·80	...	...	57·00	...	...	...
XXV. Hadban ... 115·85 ...	115	85	0·8	...	115·85	...	...	...	...	...	...
XXVI. Balani Devi ... 115·28 ...	115	28	0·8	...	115·28	...	...	...	...	...	...
XXVII. Jufranwala ... 97·95 ...	97	95	0·7	...	97·95	...	...	...	...	...	...

PROPOSALS.							
Blanks.	I Period.		II Period.	III Period.	IV Period.	V Period.	REMARKS.
	I Decennary.	II Decennary.					
Acre.	*Acre.*						
132·25	66·00	66·00	...	...	...	...	Cultivation with C. D., A. S., P. W., and deciduous trees.
...	...	...	132·23	...	...	...	Cutting in the first period only actually deceased trees. Thinnings.
...	Cl.	Cl.	Cl.	...	163·05	...	Cutting of 1st class and deceased trees. Planting with C. D.
...	...	...	140·80	...	...	...	The fourth class trees to grow up with next rotation.
...	29·00	86·85	...	...	...	...	Cutting with recultivation of A. S., P. W. 3rd and 4th class to grow with grazing.
...	29·00	56·28	...	...	...	...	Cutting with recultivation of A. S., P. W., &c.
...	21·00	73·95	...	...	...	...	Cutting with recultivation of A. S., P. W. ,&c.

PROPOSED CLEARING IN 1ST PERIOD.

Name of Compartment.	1ST DECENNARY.		2ND DECENNARY.	
	C. D.	A. S. & P. W.	C. D.	A. S. & P. W.
I. Ahliwal ...	...	102	...	...
II. Jamadar ...	...	...	...	...
III. Bindraban ...	54	198	...	...
IV. Bandar ...	...	...	...	...
V. Bara Pathar ...	25	33	...	...
VI. Deoka Galla ...	...	...	...	...
VII. Ban Pahar ...	20	50	...	...
VIII. Gotri ...	145	228	...	...
IX. Matola ...	...	...	...	...
X. Sia ...	...	...	...	...
XI. Sarni ...	...	...	...	...
XII. Shama ...	...	...	...	...
XIII. Bangrota ...	...	...	...	...
XIV. Kothi ...	20	20	...	...
XV. Jagrota ...	...	...	...	...
XVI. Zakhira ...	40	100	...	...
XVII. Lodra ...	30	100	...	...
XVIII. Pale Lodra ...	...	...	...	...
XIX. Kukéla ...	...	...	...	...
XX. Doda ...	...	...	...	...
XXI. Goti ...	...	...	...	...
XXII. Kalatop ...	21	74	...	...
XXIII. Deoka Pani ...	200	1,470	666	...
XXIV. Kajlota ...	12	60	...	...
XXV. Hadban ...	...	...	...	...
XXVI. Balani Devi ...	...	...	...	...
XXVII. Jufranwala ...	...	...	...	...

YIELD OF MATERIAL DURING THE 1ST PERIOD.

Name of Compartment.	I Decennary.				II Decennary.					
	Number of trees.	Average cubic contents.	C. D Total contents.	A. S. and P. W. Total contents.	Number of trees.	Average cubic contents.	Number of acres.	Per acre.	C. D. Total contents.	A. S. and P. W. Total contents.
I. Ahliwal ...	102	183	...	18,666	...	...	...	...	...	...
II. Jamadar ...	...	...	...	...	...	...	...	...	...	...
III. Bindraban ...	54 D.	137	7,398	...	...	...	...	...	...	...
	198	208	...	41,184	...	...	...	...	...	...
IV. Bandar ...	...	...	...	...	...	...	...	...	...	...
V. Bara Pathar ...	25 D.	151	3,775	...	...	...	...	...	...	...
	33	188	...	6,204	...	...	...	...	...	...
VI. Dooka Galla ...	...	...	...	...	...	...	...	...	...	...
VII. Ban Pahar ...	20 D.	156	3,120	...	...	...	...	...	...	...
	50	185	...	9,250	...	...	...	...	...	...
VIII. Gotri ...	145 D.	156	22,620	...	...	...	...	...	...	...
	288	200	...	45,600	...	...	...	...	...	...
IX. Matola ...	...	...	...	...	...	...	...	...	...	...
X. Sia ...	...	...	...	...	...	...	...	...	...	...
XI. Sarni	...	...	...	...	...	...	...	...	...	...
XII. Shama ...	...	...	...	...	...	...	...	...	...	...
XIII. Bangrota ...	...	...	...	...	...	...	...	...	...	...
XIV. Kothi ...	20 D.	197	3,940	...	...	...	...	...	...	...
	20	187	...	3,740	...	...	...	...	...	...
XV. Jagrota ...	...	...	...	...	...	...	...	...	...	...
XVI. Zakhira ...	40	203	8,120	...	...	...	...	...	...	...
	100	227	...	22,700	...	...	...	...	...	...
XVII. Lodra ...	30 C. D.	217	6,510	...	...	...	...	...	...	...
	100	243	...	24,300	...	...	...	...	...	...
XVIII. Pale Lodra ...	...	...	...	...	...	...	...	...	...	...
XIX. Kukéla ...	...	...	...	...	...	...	...	...	...	...
XX. Doda ...	...	...	...	...	...	...	...	...	...	...
XXI. Goti ...	...	...	...	...	...	...	...	...	...	...
XXII. Kalatop ...	21 C. D.	182	3,822	...	...	...	...	...	...	...
	74	226	...	16,724	...	...	...	...	...	...
XXIII. Dooka Pani ...	200 C. D.	172	34,400	...	666	172	...	...	97,632	...
	1,470	271	...	3,98,370	...	...	...	...	...	...
XXIV. Kajlota ...	12 C. D.	175	2,100	...	...	...	...	...	...	...
	60	267	...	16,020	...	...	...	...	...	...
	No. of acres.	*Per acre.*								
XXV. Hadban ...	29	3,716	...	1,08,634	...	...	86·85	3,746	...	2,25,340
								+ 258	...	22,417
XXVI. Balani Devi ...	29	4,300	...	1,24,700	...	...	86·28	4 300	...	3,71,004
								+ 296	...	25,438
XXVII. Jufranwala ...	24	1,885	...	45,240	...	...	73 95	1,885	...	1,39,395
								+ 130	...	10,313

YIELD OF MATERIAL.

(Assorted).

1ST PERIOD.

1ST DECENNARY.

Cedrus Deodara	...	Sawn timber	47,902	(less 15 %).
		Fuel and slabs	26,806	
		Residue...	21,096	
A S and P. W.	...	Sawn timber	4,40,666	(less 15 %)
		Fuel and slabs	2,46,780	
		Residue...	1,93,886	

All deciduous wood, no sale.

2ND DECENNARY

Cedrus Deodara	...	Sawn timber	48,676	
		Fuel and slabs	27 270	
		Residue	21,406	
A S and P. W	...	Sawn timber	4,46,953	
		Fuel and slabs	2,50,295	
		Residue...	1,96,658	

INCOME DURING 1ST DECENNARY.		Rs.
R I—Income from timber in round numbers		2,68,200
Deduct from this at least 15 % for breakage at felling and on account of rotten wood in many of the trees ...		40,000
Balance Rs. ...		2,28,200

All other income from fuel and minor products, &c, are either uncertain, not developed or go to the Chamba State.

EXPENDITURE DURING 1ST DECENNARY.			Rs
A I	... ...		1,33,800
A II	... ...		500
A III	... ...		...
A IV	... ...		5,000
A V	... ...		...
A VI	788 acres, at about Rs 25 per acre		19,700
„	Repairs		5,000
A VII	Thinnings		5,000
A VIII	Cost of revision of working plan after 5 years ...		300
A IX	... ...		...
A X	Fences, 1,58,500 running feet according to calculations ...		10,700
„	Roads		5,000
B I 4.	1 Sub-Assistant Conservator of Forests or Forest Ranger 100	Other half of pay for Bakloh	16,800
	1 Forester ... 20		
	3 Forest watchers and 1 Orderly ... 20		
B II	... ...		6,000
B III	... ...		500
	Total Rs. ...		2,08,300
	Balance in favor ...		19,900 for 1st Decennial, or Rs. 1,990 per annum.

DETAILED WORK FOR 1873-74, 1874-75, 1875-76, 1876-77, AND 1877-78, TOGETHER WITH A MAP SHOWING THE POSITION OF THE WORKS.

1. Cuttings—
   a. Clear cuttings.
   b. Clearing.
2. Thinnings.
3 Cultivation—
   a. New cultivation.
   b. Repairs.

1. The clear cuttings are entered on the map with the number of the year being marked in black Arabic ciphers.

For clearing during the next five years, I give the following list :—

CLEARINGS.

		1873-74.
V.	Bara Pathar	... 25 C. D. 33
XXIV.	Kajlota	... 12 C. D. 60
XXIII.	Deoka Pani	... 170
		1874-75.
III.	Bindraban	... 27 C D. 99
V.	Bara Pathar	... 20 C. D. 50
XVI.	Zakhira	... 4 C. D. 10
		1875-76
VIII	Gotri	... 50 C. D 100
XVI	Zakhira	... 20 C D
XXII.	Kalatop	... 10 C. D. 30
XVII.	Lodra	... 90
		1876-77.
I	Ahliwal	... 102
III.	Bindraban	... 27 C D. 99
VIII.	Gotri	... 32
XIV.	Kothi	... 20 C D. 20
		1877-78
VIII.	Gotri	... 50 C. D. 86
XVII.	Lodra	... 30 C. D. 10
XXIV.	Kajlota	... 124

The reason that I do not clear all trees out in one compartment first and then in the next, and so on, is that I take into consideration the state of health of the trees. The deteriorating timber must be cut first.

2. *Thinnings.*—In so irregular a forest it is impossible to prescribe wherever it will be necessary to thin the thicket. This must be left to the Officer in charge.

3. *a.*—New cultivations are marked with the number of the year in red. I beg that particular notice may be taken of the safety stripe in Diankund compartments.

b.—Repairs follow 1st clearings, wherever clearings are entered. All blanks should, if possible, be covered.

IMMEDIATE WORK FOR 1872-77.

Cuttings.

1. Cut actually dead trees in the Dainkúnd compartments (which have not been enumerated).

2. Cut trees on 32 feet broad boundary lines. Deodar indents should, if possible, be supplied from the Rávi Depôt.

Thinnings.

1. Should be executed in compartments No. III., V., VII, VIII, XI, XIII, XIV, XV and XVI.

2. Five acres Rhododendron on the upper part of compartment XII should be very severely thinned out to prepare the soil for deodar cultivation during next spring.

Oaks may be lopped.

Cultivation.

1. The existing nurseries are to be filled up with Cedrus Deodara, Abies Smithiana, Picea Webbiana, Deciduous and other trees.

2. New small nurseries of ½-1 acre have to be established in compartments VIII, XII and XX of deodar and Deciduous trees, with a small admixture of Abies Smithiana and Picea Webbiana. In compartment XX a nursery of 1 acre of Pinus longifolia and Cedrus Deodara is to be made. I would cultivate Eucalyptus in all four nurseries.

The planting out into the forest of the existing nurseries should be begun with next spring.

PART III.

Forest Control Book for the Working Circle Kalatop Forest.

This is simply a ledger and journal which, taking the preceding working plan for a standard, draws comparisons between the calculations therein contained and the real facts, such as they occur in the course of working the forest.

The book consists of five different parts: 1, Yield of material. This part s again sub-divided into—*a*. yield of clear cuttings, *b*. yield of thinnings, forms of which are appended.

Part II. contains forms comparing the actual yield with the calculated yield.

Part III. is a summary of the annual yield.

Part IV. is a ledger for each block, showing expenditur and income under the usual headings.

Part V. is the annual balance sheet for the whole forest

This Forest Control Book is to be kept in a careful and regular manner by the officer in charge, so that it may serve as a kind of chronicle of the forest. It will also serve as a reference and "*point d'appuis*" for future revisions of this working plan, or, in time, for making a new one.

The regular keeping of this book must be strictly insisted on, as, without a classified list of the attained yield, a revision, as regards the regulation and fixing of the budgets of yield, is impossible. To enable the Officer in charge of the forest to keep the Forest Control Book in a reliable manner, I annex a Forest Control Note Book, containing forms No. 1, *a.* and *b.*, and form No. 4, interstitched with blank pages to make notes and remarks, which may be useful for the future working of the compartments or forest. There will also be found a pocket in the Note Book containing a sketch map of the forest.

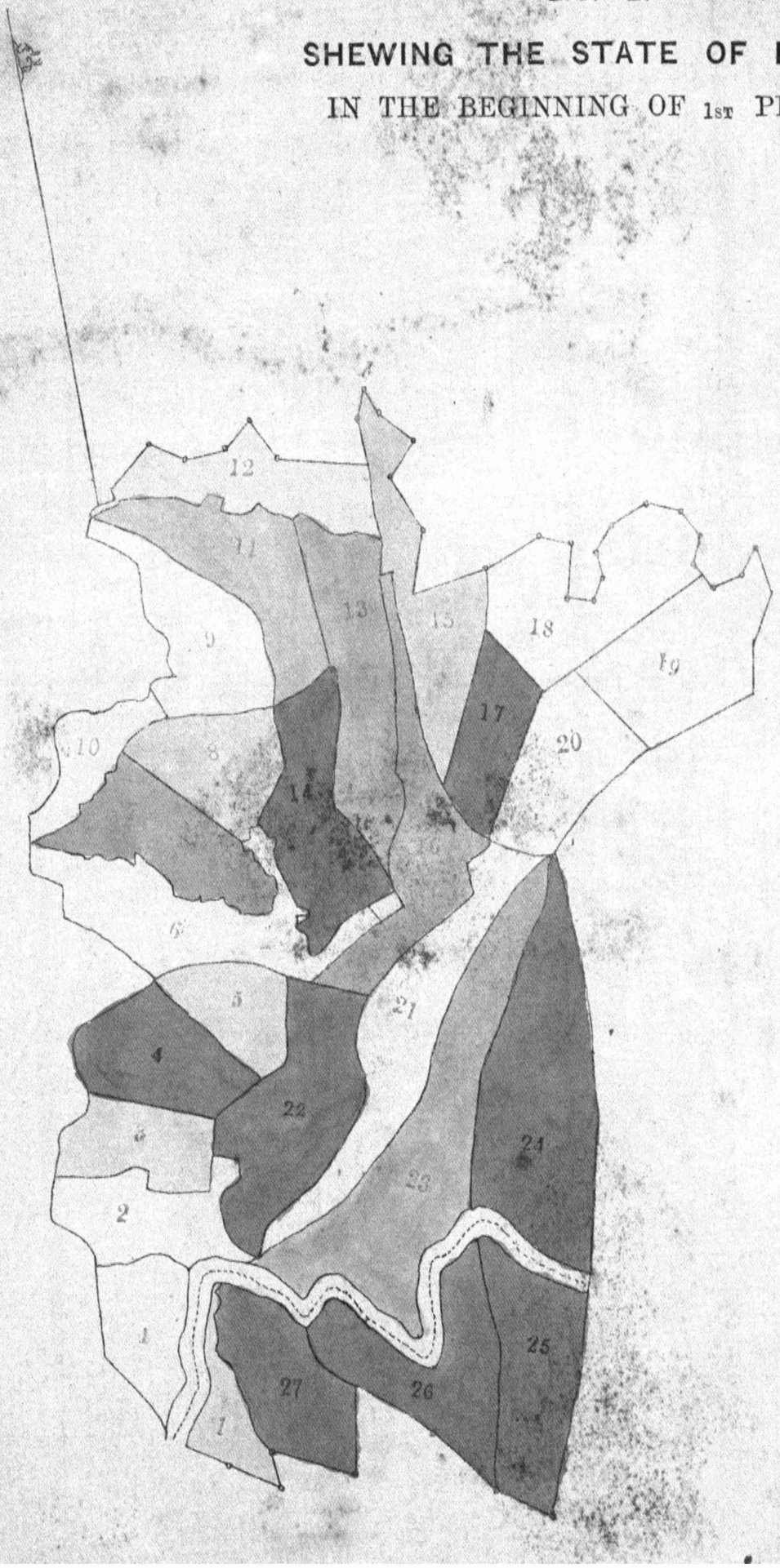
KALATOP FOREST.

WORKING PLAN MAP

No. 1.

SHEWING THE STATE OF FOREST

IN THE BEGINNING OF 1ST PERIOD.



Note.

Pink. ____ Mixed oak and Rhododendron.

Black. ____ Common firs.

Deep shade _ Mature trees.

3rd. shade _ 2nd Class.

2nd. shade _ 3rd age Class.

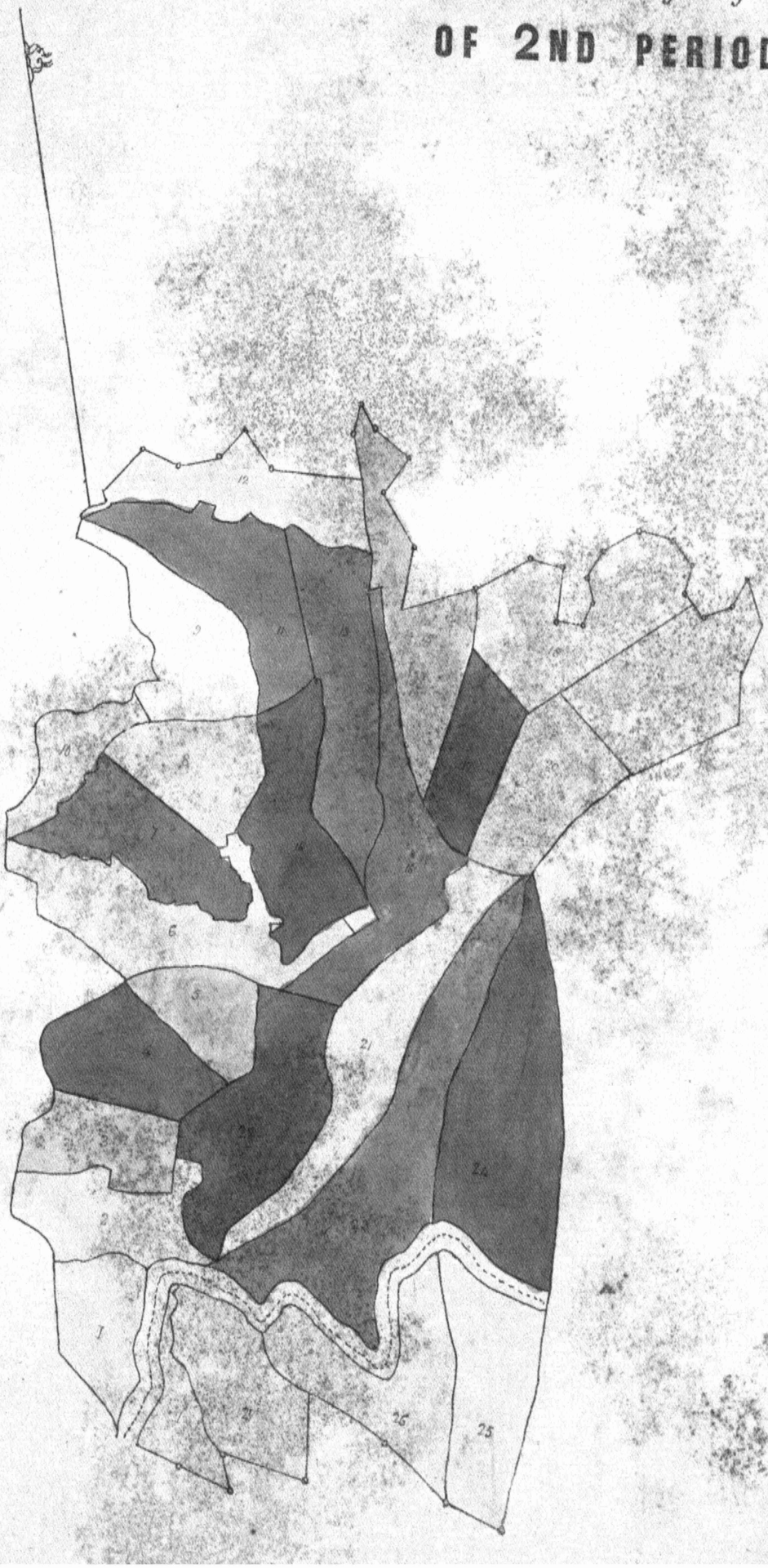
1st. shade _ Quite young.

No. 2.

SHEWING THE STATE OF

Forest in the Beginning

OF 2ND PERIOD.

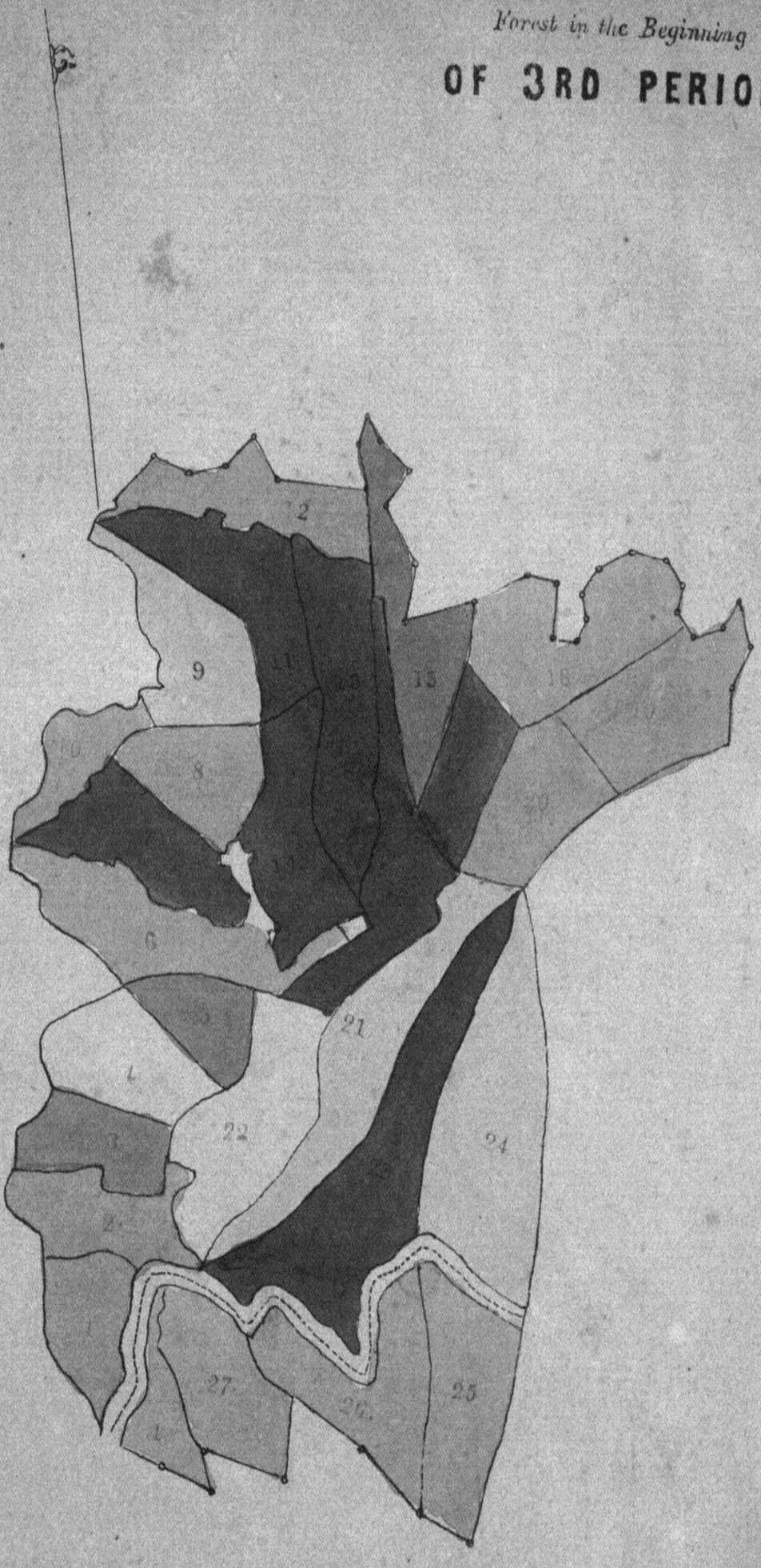


No. 3.

SHEWING THE STATE OF

Forest in the Beginning

OF 3RD PERIOD.

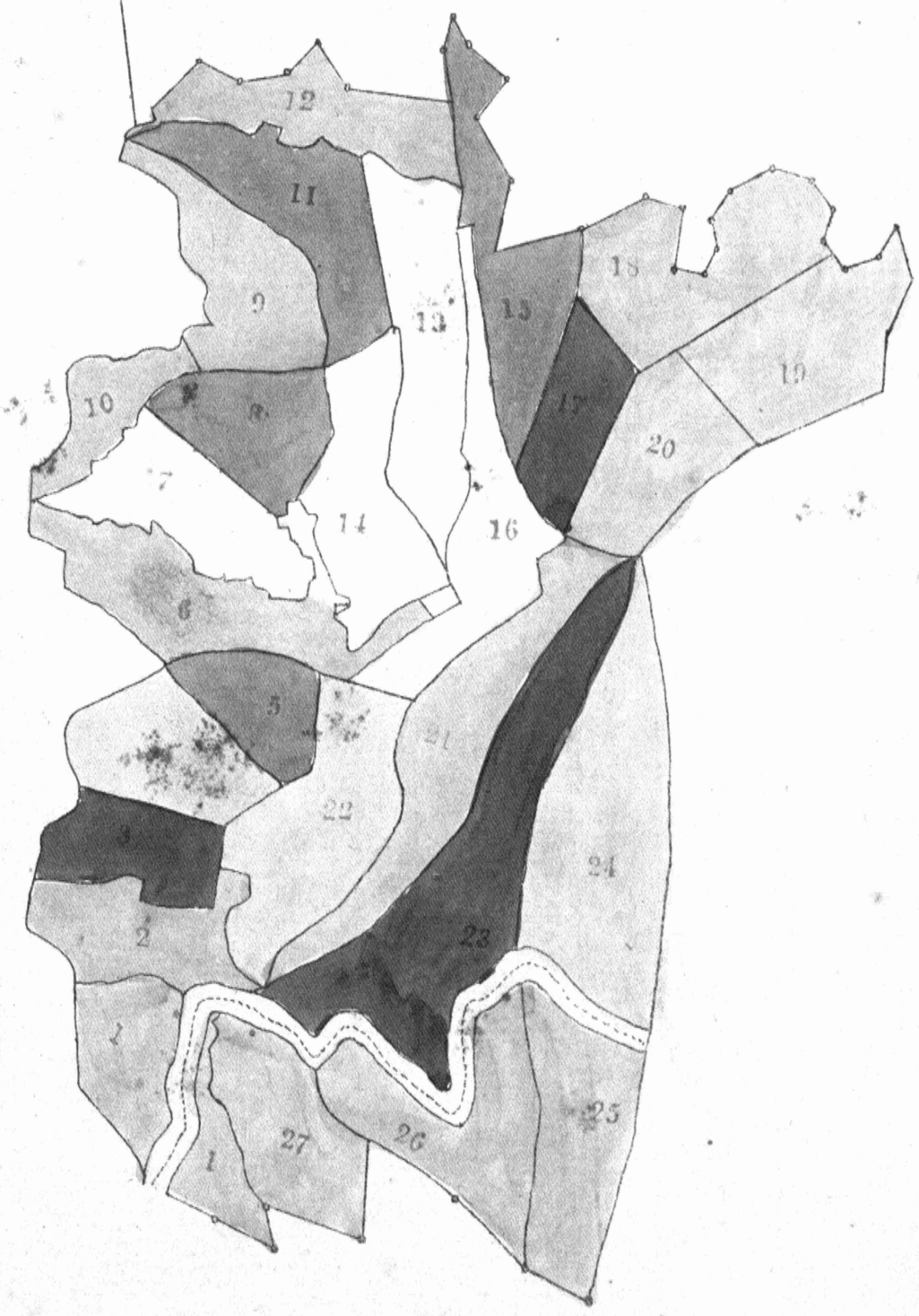


No. 4.

SHEWING THE STATE OF

Forest in the Beginning

OF 4TH PERIOD.

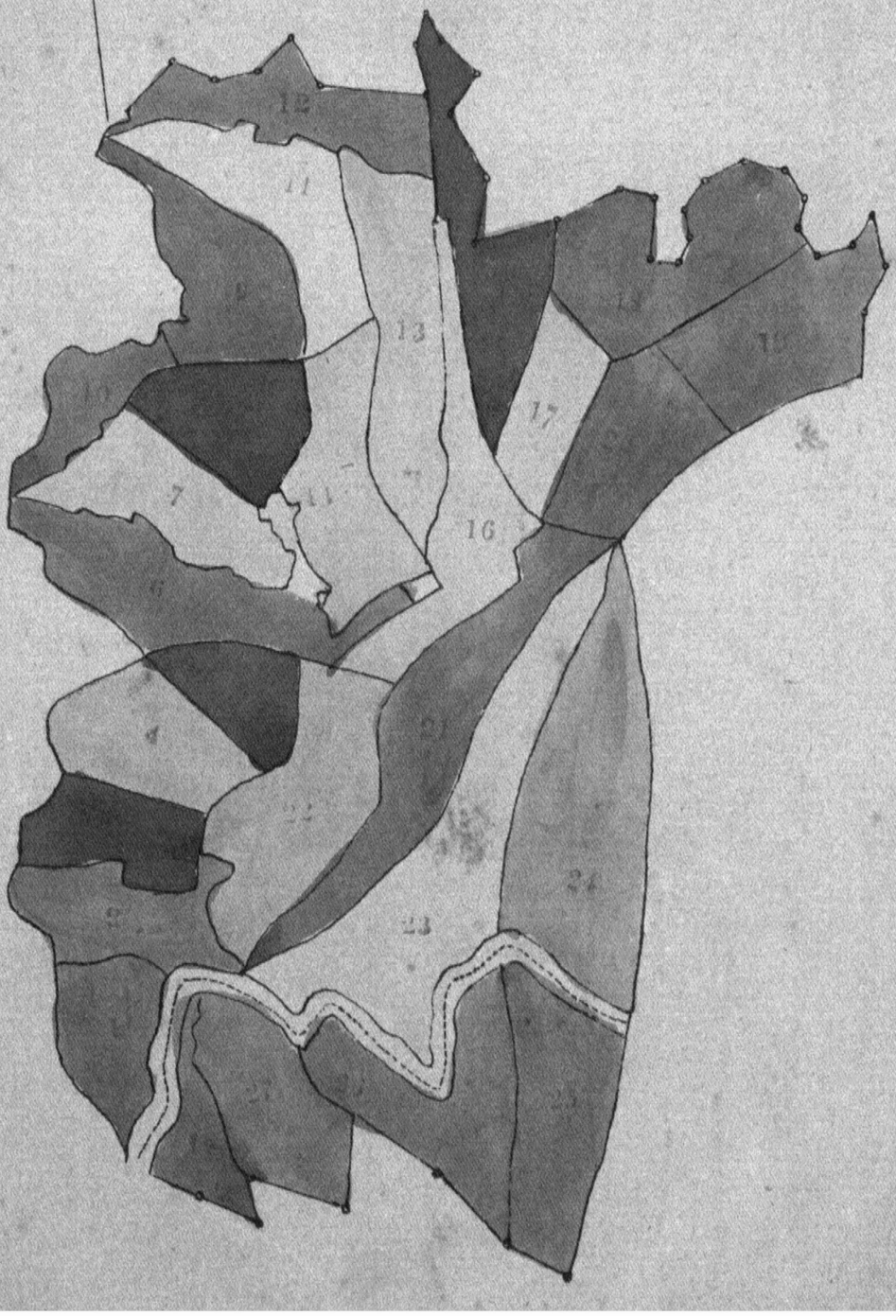


No. 5.

SHEWING THE STATE OF

Forest in the Beginning

OF 5TH PERIOD.



No. 6.

SHEWING THE STATE OF

Forest in the Beginning

OF END OF ROTATION.

TABULAR FORMS FOR CONTROL BOOK.

A. BLOCK NO. COMPARTMENT NO.

CLEAR CUTTINGS.

Year of cutting.	Manner of cutting.	YIELD.			Total cubic feet.	Residue.
		Timber cubic feet.	*Fire-wood.*			
			1st Class cubic feet.	2nd Class cubic feet.		

NOTE.—A book with 76 of these forms is wanted; one for the

B. BLOCK NO. COMPARTMENT NO.

THINNINGS.

Year of thinning.	Manner of thinning.	YIELD.			Total.	Residue.
		Timber.	*Fire-wood.*			
			1st Class.	2nd Class.		

felling, and one for the thinning in each Compartment,

Block.		Compartment.	Area.	Year.		Calculated yield.	Actual yield.	Of calculated yield.		Remarks.
Name.	No.			Calculated.	Actual.			+	−	

Note.—A book of 20 pages, 10 pages for each block, will suffice.

SUMMARY OF YEARLY YIELD. KALATOP WORKING CIRCLE.

Year.	Fellings.				Estimate cutting, thinning &c.		Total.			Remarks.
	Standard.		Coppice.							
	Useful wood	Residue	Useful wood	Residue.	Useful wood.	Residue.	Useful wood	Residue.	Grand Total	
	Maunds.									

Note.—A book of 20 leaves, each year, up to end of 1st Period.

INCOME.

Year.	Wood.									Minor yield.													Total.			Remarks.
	Timber.			Fuel.			Residue.			Grazing.			Grass.			Rent for land.			Plants.			Rent for shooting.			Fines.						
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	

EXPENDITURE.

Year.	B.									COLLECTION OF FOREST PRODUCE.									CULTIVATION AND SUPERINTENDING.																		Total.			REMARKS.
	Gazetted officers.			Establishment.			T. A. and Contingencies.			Felling.			Collecting and stacking of wood.			Miscellaneous expenditure.			Cultivation.			Canals & trenches.			Roads and bridges.			Building.			Demarcation.			Prevention of damage, weeds, animals, fires, &c.			Miscellaneous.					
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	

Note.—There must be two books of the Income and Expenditure forms; one with 27 forms for each Compartment, the other with 20 forms for each year up to the end of the first rotation.

OLD CHAMBA FOREST LEASE.

Lease of Forests in Chamba.

The Rajah of Chamba, finding great difficulty in arranging for the preservation of the forests in his territory, has requested the aid of the British Government, and has agreed to give to the British Officer, whom the Government may appoint for this purpose, the sole control of the forests in the territory of Chamba. To give effect, therefore, to the wishes of the Rajah, the following arrangements are agreed to by the Rajah of Chamba on the one hand, and by , on behalf of the British Government, on the other hand :—

1. The sole control of all the forests in the territory of Chamba is vested in the British Government, who shall appoint an officer to be Conservator of the same.

2. The British Government shall be at liberty to place under strict conservancy management such forest tracts as it shall from time to time select, and to lay down such general rules as it thinks proper for the control of all forests.

3. Such exemptions from these rules shall be granted, or such other arrangements shall be made, as shall be necessary to prevent interference with any acknowledged or established rights of the inhabitants of Chamba to cut wood for their own use.

4. No contractor, or other person, shall be allowed to cut timber in any of the forests within the Rajah's territories, except with the express permission of the Conservator, and at the rates, and under the conditions, fixed by him.

5. For every deodar (kelu) tree felled on the Chinab and its tributaries, and within the Chamba territory, by authority of the Conservator, the British Government shall pay to the Rajah of Chamba Rs. 4 ; and on the Ravi and its tributaries, for each deodar (kelu), Rs. 5 ; for other trees as follows :—

Akrot (Walnut) ...	Rs. 3 0 0 per tree.
Burj (Birch) ...	„ 1 8 0 „ „
Sannún (Ash) and all descriptions, including inferior sorts of pine	„ 2 0 0 „ „

The above rates shall be understood to refer to trees above six feet in girth, measured at man's height from the ground ; for trees of a smaller size, half rates shall be paid.

Out of this sum Re. 1 per tree is to be set aside for conservancy purposes, of which the following is to be considered a detail :—

I.—Planting trees, fencing in young plantations, and arboriculture generally.

II.—For local daks.

The expenditure for such conservancy to be entirely under the control of the Conservator, and that of the daks under the Rajah's agency.

III.—The balance from this fund, after paying expenses as above, to be divided evenly between the Forest Department and the Rajah, and to be expended at the discretion of each on the construction and improvements of roads and communications generally.

IV.—That for each of the two official years, viz, 1864-65, 1865-66, the Rajah will receive from the Conservator of Forests the sum of Rs. 1,000 in lieu of all his claims to waif timber on the Ravi within his territories, and that after that period, and during the currency of this lease, he will receive Rs. 500 per annum on this account; all such timber becoming from date of said lease the property of the British Government.

6 The accounts shall be made up half-yearly to the 30th April and 31st October, and shall be rendered to the Rajah, and the payments made at the above-mentioned rates half-yearly in the months of May and November.

7. The British Government shall manage the Chamba forests in accordance with the general system of forest management which may be in force in similar forests within the territories of the British Goverment, and, for the preservation of the same, shall maintain such establishments as it shall consider suitable in each case. The British Government will defray all the expenses of these establishments connected with the conservancy of forests, except as provided for in para. 5, Clauses II and III.

8. The British Government, or the Conservator employed by it, will defray all expenses of felling and transporting the timber, and they shall be at liberty to dispose of it by sale or otherwise at their pleasure, subject to no other claim from the Rajah than the payments referred to in para. 5 of the present agreement; and it is distinctly understood that any former or customary charges on the employés of the British Government, such as "daláli," &c., is now abolished.

9. All timber passing down the rivers Chinab and Ravi across the boundary of the Chamba territory, unless covered by a pass from the Conservator, and duly marked in the manner described in the pass, shall be presumed to be the property of the British Government, and may be taken possession of as such by the Conservator or his Agents, and the onus of proving the timber to belong to any other person shall rest upon such person.

10. The Conservator shall be authorized to exercise within the Chamba territory the powers of a Subordinate Magistrate of the first class, as described in Act XXV of 1861, for the trial of offences against property, and relating to property marks, mischief, assaults, and contravention of such Forest Rules as may from time to time be in force in the territories under the Government of the Panjab.

11. The Rajah engages to render every aid required by the Conservator in the exercise of the above powers for apprehending offenders, or supposed offenders, and for enforcing the penalties awarded by him.

12. This agreement will continue in force for a period of 20 years from the 1st of May 1864, but, on the expiry of that term, shall be renewable, at the pleasure of the British Government, for a further period of 20 years, and shall then be again renewable, in like manner, until the term of 99 years from the original date (1st May 1864) shall have expired. At the expiry of that period, it shall be at the option of the Rajah to renounce the agreement, or enter into a fresh one.

Provided that any revision or modification of the rates, and mode of payment described in Clauses 5, 6 and 13 that shall be agreed to by both contracting parties, may take place at any time without affecting the continuance of the agreement or any of its provisions.

13. In order to secure to the Rajah a fixed moderate income from his forests, the British Government agree that a minimum payment of Rs. 20,000 per annum be fixed, and that, in the event of its not cutting wood to that amount in any year, the Rajah will still receive from the said Government this sum as rent; and in event of the value of annual cutting being in excess of Rs. 20,000, the British Government agree to pay additional amount at the rate fixed, and as in this lease.

(Signed). C. O. JENKINS,
Assistant Commissioner.

Executed this the 10th day of September 1864, 27th Bhadon 1921, at Dálhousie, in presence of the undersigned.

(Signed). J. O. JENKINS,
Assistant Commissioner,
Offg. Supdt. Chamba State.

Signature of Rajah fixed in my presence.

(Signed). E. PRINSEP,
Settlement Commissioner.

(Signed). G. MACANDREW, *Major,*
Dy. Inspector General of Police.

CATALOGUE OF LETTERS ON KALATOP FOREST FROM 1862 TO 1871.

Letters from 1862 *to* 1863.

1 Letter from Mr. Prinsep, Commissioner Amritsar, to Deputy Commissioner Gurdáspúr, giving instructions regarding more careful preservation of Kalatop Forest, and ornamental woods in and about Dalhousie.

2 Letter from Deputy Commissioner Dalhousie to Dr. Cleghorn, Conservator of Forests, asking for a map of Kalatop, and for intructions and rules for planting out seedlings, &c.

3 From the Secretary Public Works Department to Dr. Cleghorn, requesting his opinion as regards the time allowed to purchasers for removing timber from Kalatop Forest.

4 From Deputy Commissioner Dalhousie to Dr. Cleghorn, complaining that no instructions had been received about the management of Kalatop Forest, and no map.

5 Letter from Mr. Prinsep to Dr. Cleghorn, approving of the Bye-laws for the sanitarium, Dalhousie, and making suggestions as to roads, felling of trees in Kalatop Forest, and other matters.

CORRESPONDENCE OF 1864, IF ANY, NOT FORTHCOMING.

Correspondence of 1865.

1 Dr. Stewart's extract from copy of records on Kalatop Forest sent to him by Captain Jenkins, Assistant Commissioner Dalhousie. Wanton felling of trees, higher price for trees to be fixed, &c., &c.

2 Captain Jenkin's statement, showing the value of trees sold from 1861 to 1864 out of Kalatop Forest.

3 Letter from Major Forbes to Dr. Stewart, stating that between 2 and 3,000 trees were felled in Kalatop before the forest was made over to Local Committee.

4 Resolutions of Local Committee, Dalhousie, regulating sale and price of trees in Kalatop Forest.

5 Letter from Dr. Stewart to Commissioner of Amritsar, urging stricter conservancy in the Kalatop Forest, and doubling the price for deodar trees.

6 Report laid before Secretary Public Works Department by Dr. Stewart anent Kalatop Forest. *Resumé* of history of the forest from 1861 to 1865. Proposals. Seignorage fees to be doubled on each deodar. Stricter conservancy of forest. Boundaries to be settled. Survey to be made. Map to be made. Classification of trees. Map for working of forest. Felling of timber to be reduced to 150 per annum. Fostering reproduction. Roads to be made. No increase of establishment (services of European Forest Officer too costly). Finishes by proposing that the management of forest be made over to Forest Department.

7 Letter from Secretary Public Works Department to Commissioner Amritsar, giving order that Dr. Stewart's suggestions should be executed, and ordering Mr. J. D. Smith, Executive Engineer Dalhousie, to make survey, and a Committee to fix boundaries.

8 Letter from Commissioner Amritsar to Dr. Stewart, stating that settlement of forest boundaries and survey must be postponed owing to the illness of several members of appointed Committee.

9 Letter from Secretary Public Works Department to Commissioner Amritsar, giving instructions as to the manner new regulations have to be carried out.

10 From Secretary Government, Public Works Department, to Dr. Stewart, enclosing letter to Commissioner Amritsar, stating that Dr. Stewart's proposals had met with the approval of the Lieutenant Governor.

11 Letter from Dr. Stewart to Secretary Public Works Department, submitting a memo. of rules for forest employés at Kalatop, and urges the necessity of framing new rules regarding the management of Kalatop Forest.

Correspondence of 1866.

1 Letter from Colonel Lake, Financial Commissioner Panjáb, to Secretary Public Works Department, declining to entertain the proposal to pay Kalatop establishment from the Imperial Revenue.

2 From Colonel Taylor to Dr. Stewart, again discussing the cost of Kalatop establishment.

3 From Dr. Stewart to Colonel Taylor, Secretary Public Works Department. Further correspondence regarding cost of Kalatop establishment.

4 From the Secretary Public Works Department to Dr. Stewart, on the same subject.

5 From Dr. Stewart to Secretary Public Works Department, same subject.

6 From Dr. Stewart to Secretary Public Works Department, same subject.

7 From Secretary Public Works Department to Dr. Stewart, asking for information as to the proposed management of forest under Deputy Conservator, and reminding him that draft of new rules has not been sent.

8 From Dr. Stewart to Secretary Public Works Department, reply to No. 7 (Deputy Conservator Rávi Division).

9 Letter from Lieutenant Chalmers to Dr. Stewart, remonstrating against the anomaly of having to pay an establishment not under the direct control of Forest Department, enclosing also a letter from Assistant Commissioner Dalhousie, stating that boundaries of Kalatop Forest had been fixed by a Committee. (No such record to be found in this file).

10 Letter from Secretary Public Works Department to Dr. Stewart, forwarding set of rules drawn up by the Local Committee of Dalhousie for the management of Kalatop Forest.

11 Letter from Dr. Stewart to Secretary Public Works Department, objecting to several rules laid down by the Dalhousie Committee.

12 Letter from Commissioner Amritsar to Secretary Public Works Department, requesting that expenses of Kalatop road may be defrayed by Imperial Revenue.
Reply; declining proposal.

13 Letter from Secretary Public Works Department to Dr. Stewart, requesting that the Forest Department should defray expenses incurred in fixing the boundary of Kalatop Forest.

Correspondence of 1867.

1 Letter from Secretary Public Works Department to Commissioner Amritsar, discussing proposed rules for the management of Kalatop Forest.

2 Letter from Secretary Public Works Department to Dr. Stewart, asking his opinion as to the advisability of felling 200 trees in Kalatop Forest for the new barracks at Bakloh.

3 Letter from Dr. Stewart to Secretary Public Works Department, regulating proposition.

4 Letter from Secretary Public Works Department to Commissioner Amritsar, sanctioning the payment of Rs. 36-11-0 incurred in demarcating the Kalatop boundary.

5 Letter from Superintendent Chamba Forests to Secretary Public Works Department, complaining that Conservator of Forests has taken no steps towards the improvement of Kalatop.

6 Letter from Dr. Stewart to Assistant Commissioner Dalhousie, asking for a return of trees felled in Kalatop during 1865 and 1866.

7 Letter from Dr. Stewart to Secretary Public Works Department, refuting statements of Superintendent of Chamba States.

8 Letter from Assistant Commissioner Dalhousie, sending return of number of trees felled in Kalatop during 1865 and 1866.

9 Letter from Secretary Public Works Department to Dr. Stewart, informing him of an application from Superintending Engineer 3rd Circle for the sanction of a temporary establishment for the purpose of surveying Kalatop. Requests Conservator to state against what Forest Budget item the amount may be charged.

10 Letter from Dr. Stewart to Secretary Public Works Department, pointing out that there is a Budget provision for Rs. 600 for the Ravi Division, from which the expenditure of surveying Kalatop may be cut.

11 Letter from Secretary Public Works Department to Superintending Engineer 3rd Circle, sanctioning expenditure for the survey of Kalatop Forest Rs. 267, chargeable to the Budget provision for survey, &c., in the Ravi Forest Division.

12 Letter from Secretary Public Works Department to Dr. Stewart, making enquiries regarding the Kalatop Forest income, with a view to definite orders of Government being issued on the points in question.

13 Letter from Dr. Stewart to Secretary Public Works Department, deploring the misunderstanding that exists with regard to the proper management of Kalatop Forest. Suggests that, as a *dernier resort*, the management may be made over to the Forest Department entirely.

Correspondence of 1868.

1 Letter from Assistant Commissioner Dalhousie to Commissioner Amritsar, suggesting that the management of Kalatop Forest be made over to the Forest Department, with one proviso, that 150 trees be annually set aside for the use of the Dalhousie Community.

2 From Dr. Stewart to Secretary Public Works Department, recommending that orders be issued to make over complete control and management of Kalatop Forest to Forest Department.

3 From Dr. Stewart to Secretary Public Works Department, drawing his attention to the proposed action of Municipal Council of Dalhousie as to Kalatop funds.

4 Letter from Dr. Stewart to Commissioner Amritsar, calling his attention to the published proceedings of Dalhousie Municipal Committee, *viz.*, that Municipal Committee had resolved to repair the Kalatop road from the Kalatop income.

5 Letter from Commissioner Amritsar to Dr. Stewart, informing him that the Dalhousie Municipal Committee have applied that the management of Kalatop Forest may be made over to the Forest Department, but that they may receive the income from the forest.

6 Letter from Dr. Stewart to Assistant Commissioner Dalhousie, asking for a return of number of trees felled in Kalatop Forest during 1867.

7 Letter from Secretary Public Works Department to Commissioner Amritsar, declining to make over any portion of the income derived from the Kalatop Forest to the Municipal Committee Dalhousie.

8 Letter from Commissioner Amritsar to Dr. Stewart, forwarding resolution of Dalhousie Municipality regarding expenditure on Kalatop road from income of Kalatop Forest.

9 Letter from Dr. Stewart to Mr. Murray, Deputy Conservator, asking for further information regarding position, &c., of Kajloha.

10 Letter from Assistant Commissioner Dalhousie to Dr. Stewart, enclosing list of number of trees felled in Kalatop Forest during 1867.

11 Letter from Secretary Public Works Department to Dr. Stewart, requesting him to prepare a revised set of rules for the management of Kalatop Forest, in conjunction with the Commissioner of Amritsar, enclosing also a letter from Deputy Commissioner Gurdaspur to Commissioner Amritsar, calling for new rules and pointing out the errors in the old ones.

12 Letter from Dr. Stewart to Commissioner of Amritsar, requesting that he may be favored with Commissioner's views in detail as to revision of Kalatop Forest Rules.

13 Letter from Dr. Stewart to Secretary Public Works Department, forwarding copy of his letter to Commissioner of Amritsar, touching revision of Kalatop Forest Rules.

14 Letter from Mr. Murray to Dr. Stewart, touching monies paid into the Gurdaspur treasury to the credit of Forest Department on account of felling of trees. Informing him also that the Executive Engineer Dalhousie refused to take the trees made over to him by Mr. Rigby, but applied to Assistant Commissioner, who, by telegraphic order, got permission to cut down trees, as they were urgently required for the Baloon barracks.

15 Letter from Dr. Stewart to Mr. Murray, asking for details of dispute between Mr. Rigby and Executive Engineer Dalhousie, with a view to forwarding the case to Government.

16 Letter from Secretary Public Works Department to Dr. Stewart, requesting that instructions may be forwarded to Deputy Conservator to take over charge of the Kalatop Forest.

17 Letter from Commissioner Amritsar to Dr. Stewart, asking him to order the Deputy Conservator to relieve Captain Millar of the charge of the forest.

18 Letter from Dr. Stewart to Mr. Murray, Deputy Conservator, instructing him to take over charge of Kalatop Forest, and laying down certain rules as to immediate management of the forest.

19 Letter from Dr. Stewart to Secretary Public Works Department, informing him that the Deputy Conservator Chinab and Ravi Division has been directed to take over charge of Kalatop Forest, and discussing amendment of rules for managing forest.

20 Letter from Dr. Stewart to Commissioner Amritsar, informing him that the Kalatop Forest has been taken over by the Forest Department.

Correspondence of 1869.

1 Letter from Dr. Stewart to Commissioner Amritsar, informing him that Government has approved of his views expressed as to the Kalatop rules. Lays down some more rules as to the management of Kalatop Forest.

2 Letter from Secretary Public Works Department to Dr. Stewart, expressing his approval of new rules.

3 Letter from Commissioner Amritsar to Dr. Stewart, asking instructions as regards the drafting of new rules.

4 Letter from Commissioner Amritsar to Dr. Stewart, asking that the interests of the Dalhousie residents, as regards supply of timber, should be protected.

5 Letter from Mr. Murray, Deputy Conservator, to Dr. Stewart, reporting that he had taken charge of Kalatop Forest on the 25th November 1868, and sending a statement of accounts connected with the forest.

6 From Dr. Stewart to Secretary Public Works Department, enclosing a copy of Mr. Murray's letter, and stating that certain discrepancies in the accounts handed over by the Assistant Commissioner of Dalhousie had been brought to his notice.

7 From Dr. Stewart to Secretary Public Works Department, stating that in his opinion the wants of residents of Dalhousie, as regards timber, might be supplied at the discretion of Deputy Conservator.

8 From Dr. Stewart to the Secretary Public Works Department, sending an omitted para. for new rules.

9 Letter from Mr. Murray, Deputy Conservator, to Dr. Stewart, regarding the unaccounted for receipts from the Kalatop Forest fund by Assistant Commissioner Dalhousie.

10 From Dr. Stewart to Secretary Public Works Department, requesting him to obtain a detailed account from Assistant Commissioner Dalhousie with regard to unexplained expenditure of forest funds.

11 Letter from Dr. Stewart to Mr. Murray, requesting him to obtain a distinct account of sums mentioned by Assistant Commissioner from that officer.

12 Letter from Dr Brandis to Mr. Powell, Officiating Conservator, giving instructions—1, how to conduct felling operations in the different forests; 2, directing him to have maps prepared of each Forest Division, also detailed maps, &c., &c.; 3, that each Divisional Officer should draw up a comprehensive report of his forest ranges, &c., &c.

13 Letter from Dr. Brandis to Mr. Powell, containing a number of remarks in connection with the plan of operations of the Kalatop Forest.

14 Letter from Mr. Powell to Mr. Murray, Deputy Conservator, giving instructions how to work the Kalatop Forest.

15 Notes on Kalatop Forest, and suggestions as to working it, by Dr. Brandis.

16 Copy of Chamba lease obtained from Mr. Rigby.

Correspondence of 1870 *and* 1871.

1870.

1 Letter from Mr. Rigby, Assistant Conservator, to Mr. Powell, Officiating Conservator, informing him that he and the Chamba Vakil are about to settle boundaries of Kalatop Forest, sale of trees, &c., &c.

2 Letter from Mr. Rigby to Mr. Powell, asking for instructions to stop operations of Dalhousie contractors.

3 From same to same, asking for permission to build forest hut and sheds in Kalatop Forest.

4 From same to same, informing him of arrival of Chamba Vakil, settling boundaries and making fences in Kalatop Forest.

5 From Mr. Rigby to Mr. Powell, informing him of Colonel Reid's expected visit to settle boundary question.

6 From same to same, telling him of new scheme to open out new deodar forest in Kalatop, and requesting information about clearing away stumps, &c.

7 From same to same, asking permission to buy new tools required for forest operations.

8 Mr. Powell's reply to Mr. Rigby's demi-officials from May till June, giving instructions, &c., &c., how to work Kalatop Forest.

9 Letter from Mr. Rigby to Mr. Powell, acknowledging letter, and promising to carry out all instructions for the proper working of Kalatop Forest.

10 Letter from Colonel Reid to Mr. Powell, regarding the fencing in of forest, and Mr. Powell's reply.

11 Memo. of trees fit for felling in Kalatop Forest, sent by Mr. Rigby to Mr. Ribbentrop.

12 Letter, dated 12th September 1870, from Mr. Powell to Mr. Ribbentrop, instructing him to proceed to Kalatop for the purpose of making a working plan.

1871.

13 Mr. Ribbentrop's reply to Mr. Powell's letter of instruction.

14 Notes on Kalatop Forest by Mr. Ribbentrop.

15 Letter from Mr. Powell to Mr. Ribbentrop, dated 11th June 1871, instructing him to proceed to Kalatop Forest for the purpose of making a working plan.

16 Papers regarding a dispute between Mr. Robson and the Forest Department about the removal of timber purchased by Mr. McGuffin from Deputy Conservator in Kalatop Forest.

Copy of a letter No. 164 dated Camp Bakloh 23rd May 1871, from Baden Powell, Esq., Officiating Conservator of Forests Panjáb, to Colonel Blair Reid, Superintendent Chamba States

In my No. 1064 dated 11th March 1871, para. 6, I alluded to a map of Kalatop, and a settlement to be made according to it, which was not ready at the time

2. I have now the honor to enclose a map, and to inform you that, having visited the forest boundaries and the fencing, I am in a position to lay before you the following final proposals.

3. The *whole* forest of Kalatop, shown in the map, is to be *reserved.* But as the reservation would be a hardship to certain gaddis and neighbouring villagers, I propose to allow certain forest privileges in it under the (proposed) rules, 11—13.

4. First as to the boundaries. They were ascertained at the time of survey, and are the same as have all along been recognized as such since the first management.

The south boundary is a natural one, and needs no pillars ; also the east boundary, being the Bholani Devi nallah. It is only on the west and north that pillars have to be set up The boundaries are shown in the map by a black line. As they all skirt along the *actual forest* boundary, I have satisfied myself that no one raises any objection, and therefore beg that I may be authorized to order pillars to be put up accordingly.

5. The *Jagrota* people had something to say about grazing, but that refers to the exercise of grazing within the forest boundary, and not to the boundary itself, so that the above statement is correct.

6. Next as to *forest privileges.* The black and yellow line shows a line of fencing, within which all forest privileges of all kinds are prohibited. This fencing ends along the "Kalatopwali nalah ;" of that tract to the south of the nalah I will speak presently.

7. In the portions *colored green* outside this fence, grazing may be allowed, and cutting grass to the neighbouring villagers and to the gaddis, who *now* frequent the place, but new comers should have no claim.

8. Trees must, under rule 12, be felled (in the space) by written permit of the Forest Officers.

9. New land must not be broken up for cultivation without special consent, but existing cultivation to be respected.

10. In the portion within the fence (white) I visited the plots of cultivation, or rather plots supposed to be cultivated, for some had not been touched for two or more years, with the Vakil whom you were kind enough to depute, and we agreed that the plots A B C D E F G H and K were to be compensated, and we shall gradually convert them into so many plantations.

K happens to be outside the fence, but too dangerously near to be safe, so Sheru agreed that it was fair to include it.

Also in a line with K, but *below* it (in the green), a man has *just* broken up a bit of land. As it is undesirable to have the *fires*, and huts (that a bit of cultivation entails) on the Gotri grazing ground, Sheru said he could buy the man out if I obtained your consent. The piece is quite a small one.

The plot F is as yet *untouched*, but represents a piece intended to be given to Mr. Stiswell (?) for cultivation. He already owes 1½ year's revenue, and has, it would seem, no claim on the land. I will gladly pay the revenue over due. The plots D and G are both fallow.

11. I have to add a word about the *fencing.* The whole has already been done with your consent along the west and north, and it has now to be completed through the

middle of the forest(no question therefore arising), from just above where the word "Lodra" is written, due south to the Kalatop nalah, then along the nalah to join the fence at Bathri Galli. Arrangements have been made by which the Gujar at Bathri Galli need not be interfered with, as the fencing surrounds his grazing grounds.

12. In only one place was an objection made, and that is in the small triangular bit, just above the word "Lodra." The Jagrota people objected to its being fenced in, and agreed only to the *lower line of the triangle.* Mr. Rigby acceded to this, but I should like to make the point, because the whole space is covered with dense young deodars; it is not more than half or three-quarters a "sari," and the young growth is so dense that there is no blade of grass for grazing among them

13. I explained this to the Jagrota headman, and he merely said that he did not like it, but could not deny that, unless the young trees were nibbled off, there would be no grass.

The numerous deodars about Jagrota that are outside the fence are mostly too old to be hurt by cattle, and, though outside the fence, are within the forest boundaries, and will not be felled without leave under rule 12.

14. Lastly, as regards the bit to the south of the Kalatopwali nalah. It is mostly steep, and practically only one or two men graze on it. I wish therefore to have the *rule* no grazing, because there is no object in creating grazing, when there is in reality little or none, but will, as a special case, give these men permits; about Kajlota there is deodar, which may be fenced hereafter, and the preservation of the undergrowth, &c, in this part of the forest will add to the beauty of the road which passes through it.

15. I have now only to request that if this is approved of, a notice may be issued under rule 4, to the effect that—

(1). Grazing and every thing else is prohibited within the fence and to the south of the Kalatopwali nalah.

(2). That grazing and cutting grass are allowed *outside* the fence to neighbouring villagers, and to the gaddis and Gujars who at present come there.

(3). That existing cultivation outside the fence, but in the forest, is to be continued, but new bits of land are not to be broken up.

(4). That trees inside the *forest* are not to be felled without a permit from the Forest Officer. *

(5). That Mr. Rigby is the Assistant Conservator, and has power to control and manage the forest.

(6). That all mischief, trespass, setting fire to trees *or grass*, lopping deodar trees, is absolutely prohibited in every part of the forest, and will be punished.

Copy of a letter No. 39 dated Chamba 6th June 1871, from Colonel Blair Reid, Superintendent of Chamba, to Baden Powell, Esquire, Conservator of Forests Panjáb.

I have the honor to acknowledge the receipt of your letter No. 164 of the 23rd ultimo, with map of Kalatop.

2. The arrangements proposed for conservancy of the reserved forest of Kalatop appear unexceptionable. I have examined them in detail with Mr. Rigby, the Assistant Conservator in charge, and have arranged with him to give immediate effect to all the arrangements proposed in your letter, which appear to require no further reply, excepting that, as regards the plot of ground referred to in para. 10 of your letter as having

* The local officers have limited powers to comply with small indents, larger ones are sent by the post. A European Officer will, however, be at Kalatop for some time to come.

been given to Mr. Stiswell (properly Staesfeldt), and for which you offer compensation, no payment will be required, the grant having lapsed in consequence of the arrears of revenue not having been paid.

NEW CHUMBA FOREST LEASE.

WHEREAS by the terms of an agreement bearing date at Dalhousie the tenth day of September 1864, His Highness the Rajah of Chamba, having requested the aid of the British Government in the management of his forests, has, for that purpose, leased the said forests to the British Government, and whereas certain additions to, and alterations in, the said agreement having been from time to time consented to by the parties thereto, it is advisable now to embody the said additions and alterations in a new form of agreement, and also, at the same time, to make more definite provision by the terms of such agreement for the proper conservancy of the forests aforesaid.

The following ARTICLES have been agreed upon between His Highness the Rajah of Chamba of the one part, and Major General George Reynell Taylor, Commissioner, at present, for the Amritsar Division of the Panjab, on behalf of the British Government, of the other part.

I.—From and after the date of the execution of this present agreement, the former agreement bearing date at Dalhousie the 10th day of September 1864, shall cease to be of force, and shall be deemed to be cancelled and superseded by this present agreement.

II.—The term "Forest," as used in these articles, shall mean and include—

(*a*)—Those tracts of country covered with trees, or from which the trees have been felled, which, for seven years past and upwards, have paid no revenue as cultivated land to the Chamba State.

(*b*)—Such other tracts of land, cultivated or uncultivated, covered with trees, or barren, as the Rajah of Chamba may from time to time consent to give up for the purpose of consolidating or extending the area of any existing forest, or of forming new plantations or forests.

III.—With the exception of the forests enumerated in Article VI., all forests in territories subject to His Highness the Rajah of Chamba shall be preserved, worked and managed according to the rules set forth in the schedule hereto annexed, and the right to the produce thereof shall vest in the several parties therein declared to be entitled thereto.

PROVIDED, that the said rules shall be in force for 3 years from date of this agreement; at the end of which time the British Government may call for a report thereon and decide whether they shall continue as they are, or be in any respect added to, modified or amended.

IV.—The Rajah of Chamba agrees to grant to the British Government, during the currency of this agreement, all his rights in unclaimed waif and windfall timber on the rivers "Chinab" and "Ravi" and their several tributaries, and in all other parts of his territories, and further, to grant to the said Government the entire control of rivers and streams coming from and passing through the forests in so far as concerns the floating, management or collection of timber in transit to the timber depôts.

V.—The British Government may invest all or any of the officers in whom, under the said rules, the control of any forest, or of timber-floating operations, is vested, with all or any of the powers of a Magistrate, as described in the Code of Criminal Procedure in force in British India, to be exercised within the Chamba territory, for the purpose of trying and punishing offences against the rules aforesaid.

And the Rajah of Chamba engages to render every aid required by the officer or officers authorized to exercise such powers for bringing to justice all persons charged with offences against the rules, and for enforcing the judgment awarded against them.

VI.—The following forests, groves and trees shall be excluded from the operation of Article III., that is to say—

(1). The forests known as "Jamwar and Kajjiar," as demarcated and defined according to the terms of a letter from the Superintendent of the Chamba State to the Secretary to the Government of the Panjab, in the Department of Public Works, No. 22, dated July 5th 1869.

(2). Two hundred trees (200 trees) of "Kelu" (Cedrus Deodara) around the temple at Kilar, 20 of the same kind at Baira, 15 at Kothair, 60 at Bassu, 50 at Piura of the same kind, at Chanota also, 60 of the same kind.

Provided always, as regards trees mentioned in the preceding clause, that they shall not be felled, but that such trees as fall by natural causes shall be at the disposal of the managers of the shrine or temple, for which they are set apart, for the purposes of repairing the same.

Provided also, that such excepted trees may, where necessary, be marked, or the area in which they stand demarcated.

3. All trees growing on village or other lands under cultivation, not being forest lands within the meaning of Article II.

4. Certain groves in the vicinity of the town of Chamba, *viz.*, a grove of *Chil* trees between the rivers Ravi and Sao, and a grove of *Shisham* trees, about two miles from Chamba, between the river Ravi and the new road to Dalhousie.

5. All trees growing within 200 feet on either side of the public roads, hereinafter enumerated, or in the vicinity of any spring or well.

PROVIDED that when such road or spring or well passes through, or is situated within a forest which is reserved under the rules hereto annexed, this clause shall not be held to affect such forest, but it shall remain in all respects as a "reserved forest" under the rules; the British Government on their part engaging not to fell trees in such forest within 200 feet of such public road, or in the vicinity of such spring or well, without the previous consent of the Superintendent of the Chamba State.

The public roads are as follows :—

1. Chamba to Pangi.
2. Chamba to Dalhousie, *viâ* Chil.
3. Chamba to Burmour and Jurma, in British Lahoul.
4. Kilar in Pangi to Padar, in Cashmere territory.
5. Kilar in Pangi to Jurma, in British Lahoul,
6. Chamba to Nurpur.
7. Chamba to Dharmsalah.
8. Chamba to Badrwar, in Cashmere territory.
9. Dalhousie to Dharmsalah and Nurpur.
10. Chamba to Madhopur at the head of the Bari Doab Canal.
11. Chamba to Dalhousie, *viâ* the Kujjiar Forest.
12. Chamba to Dalhousie, by the new level road.
13. Chamba to Jumwar.
14. Chamba to Sao.
15. Dalhousie to Denera, through the Chamba territory.
16. Chamba to Shahpur on the Ravi.

VII.—In consideration of the rights and privileges conveyed to the British Government by the preceding articles, the British Government agree to pay to His Highness the Rajah of Chamba seignorage for every tree felled for the use of the British Government at the following rates :—

Kelu (Cedrus Deodara) if felled on the Chinab and its tributaries	Rs.	4	0	0
Ditto if felled on the Ravi or its tributaries	,,	5	0	0
Akrot (Walnut)	,,	3	0	0
Burj (Birch)	,,	1	8	0
Sunnoon (Ash)	,,	2	0	0
All other trees (including all conifers except Kelu) ...	,,	2	0	0

Provided always, that if the number of trees felled by the British Government in any one year is not sufficient to make the seignorage thereon amount to the sum of twenty thousand rupees, the seignorage payable in such year to the Rajah shall be twenty thousand rupees and not less.

And in consideration of the right to waif and windfall conveyed by Article IV, the British Government further agree to pay to the Rajah the sum of one thousand rupees annually.

VIII.—One-fourth part of all sums paid to the Rajah in respect of trees felled under Article VII shall be set aside and devoted to the following special purposes, that is to say :—

Twenty rupees per centum of the said fourth part shall be for the Rajah of Chamba to expend upon Local Postage service. Thirty rupees per centum of the said fourth part shall be for the Rajah of Chamba to spend upon making and repairing roads and bridges. Fifty rupees per centum of the said fourth part shall be returned to the British Government to be expended on the planting, restoration and conservancy of forests.

IX.—The accounts shall be made up half-yearly to the 31st of March and the 30th September, and shall be rendered to His Highness the Rajah of Chamba, and the payments agreed upon in Article VII shall be made half-yearly in the months of April and October, on or before the 5th day of the month.

X.—No fees or other payments, except those agreed upon in Article VII shall be demanded or be payable by the British Government or its servants on account of any forest produce. Provided that nothing in this clause shall be held to prevent the levy of tolls at bridges and ferries, or roads, lawfully payable to the Chamba State.

XI.—Except as provided by Article VIII, the whole cost of conserving the forests which are "reserved" under the rules, together with all costs of felling and transporting timber for the use of the British Government, and of maintaining the necessary establishments in such forests, shall be borne by the British Government.

XII.—This agreement shall continue in force for a term of 20 years, commencing from the first day of May 1864.

On the expiry of this term it shall be renewable at the pleasure of the British Government for a further term of 20 years, on expiry whereof it shall be again renewable in a like manner until the term of 99 years, counting from the first day of May 1864, shall have expired.

At the expiry of such term it shall be at the option of the Rajah of Chamba to renew this agreement or enter into a fresh one.

Provided always, that any revision or modification of the rates and mode of payment described in Articles VII, VIII, IX that may be agreed to by both parties may be made at any time without affecting the continuance of this agreement or any of its provisions.

Executed this 8th day of July 1872, at Chamba.

In the presence of
J. MONTGOMERY,
Asst. Commr.

(Signed) G. R. TAYLOR,
Commr. and Supt. Amritsar Division,
on behalf of the British Government.

In the presence of
G. MACANDREW,
Lieut.-Col.

GOPAL SINGH,
Rájah of Chamba,
&c., &c.

SCHEDULE I.

RULES FOR CHAMBA FORESTS.

CHAPTER I.

Of the division of Forest land into reserved and unreserved.

1. *Classification of forests.*—There will be two classes of forests, to be called reserved and unreserved. The Conservator of Forests, or such other officer as he may authorize in that behalf, may from time to time, but subject always to the exceptions agreed to by the terms of the lease, declare that any forest shall be "reserved."

2 *Selection and demarcation of reserved forests.*—The Conservator of Forests, or other officer as aforesaid, may indicate by posts or other temporary marks the boundaries which, after local enquiry, in concert with an official of the Chamba State deputed for the purpose, are in his opinion the true limits of the tract to be reserved. But it shall rest with the Superintendent of the Chamba State, in concert with the Conservator of Forests, to determine finally the boundaries of such tracts.

3. *Procedure after final demarcation*—When the boundaries have been finally determined as aforesaid, the Forest officer shall, if the tract is not already defined by natural boundaries, demarcate the same by conspicuous boundary marks according to the final decision aforesaid.

Record of boundaries—A record of the boundaries shall be then prepared, accompanied by such maps as may be necessary. The record shall be signed by the Conservator of Forests, and an attested copy of it shall be sent for deposit to the Superintendent of the Chamba State.

4. *After final demarcation public notice to be given*—Wherever any forest is reserved and finally demarcated under this rule, due notice shall be publicly given in the vicinity of such forest, and the inhabitants be warned against tresspass or other infringement of the forest rules.

5. *Procedure in including waste or cultivated land for plantations, &c.*—If in any case it is desired to include in a reserve forest area any waste or cultivated land which is not forest within the meaning of Article II of the agreement, or to take up a plot of such land for the purpose of plantation, such plot shall only be included or taken up with the consent of the Superintendent of the Chamba State, and after payment of such compensation, if any, as he may award. After declaration of such consent and the determination of compensation, if any, the plot may be included in the area of a reserved forest, or demarcated as a separately reserved forest, as the case may be.

6. *Control of reserved forests.*—Reserved forests shall be under the exclusive control of the officer appointed by the British Government to be Conservator of Forests in the Panjab, and of such officers subordinate to the Conservator as may be appointed by the said Government to the charge of any divisions of the forests.

7. *General rights to produce in reserved forests.*—Except where otherwise expressly provided, the British Government shall have the exclusive right to the produce of such forests.

8. *Management of unreserved forests.*—All other forests to which these rules apply are called "unreserved" forests. They will be under the management of the Superintendent of the Chamba State.

9. *Right to produce in unreserved forests.*—Subject to the protective provision hereinafter contained, the unreserved forests are open to the Rajah of Chamba for his own use, for the exercise of such forest privileges as are allowed by His Highness, but not for the purposes of sale or merchandize.

Chapter II.

Of the protection of unreserved forests.

10. *Conservancy of unreserved forests—acts prohibited.*—Unless expressly permitted by the Superintendent of the Chamba State, the following acts are prohibited in all unreserved forests :—

(*a.*)—Breaking up forest land for cultivation.

(*b.*)—Setting fire to grass tracks in the vicinity of forests, or negligently permitting fire to extend thereto.

(*c.*)—Setting fire to trees, brush-wood, or stumps.

(*d.*)—Cutting out slabs, torches, &c., from the stems of standing trees, barking or boring for turpentine, or otherwise injuring standing trees.

(*e.*)—Lopping the branches of the *valuable* kinds of trees afterwards enumerated, Cutting young trees of the *valuable* kinds if less than four feet in girth at three feet from the ground.

(*f.*)—Selling standing trees.

(*g.*)—Cutting the *valuable* kinds of trees hereafter enumerated, without the written permission of the Superintendent of the Chamba State, or of some one authorized by him to grant such permission. The valuable kinds of trees alluded to in the foregoing rules are—

Kelu, *C. Deodara*,
Darchil, *C. Excelsa*,
Chil *P. Longifolia* (in tracts where the Superintendent may specially order).
Akhrot, Walnut (*Juglans regia*).
Sunnun, Ash (*Fraxinus floribunda*).
Tun or dour, Hill tun (*Cedrela serrata*).
Chinar, Plane (*Platanus orientalis*)

Permission shall not be given for the felling of more than an aggregate number in all the unreserved forests together, of 300 Kelu trees in any one year, and return of Kelu trees so felled shall be annually rendered by the Superintendent of Chamba State to the Conservator of Forests.

Chapter III.

Of the protection of "reserved forests."

11. *Conservancy of reserved forests.*—All the prohibitions enumerated in rule 10 shall (*mutatis mutandis*) be enforced in reserved forests. In addition thereto the following acts are prohibited in reserved forests :—

(*h.*)—Traversing a forest except on authorized or public roads and pathways.

(*i.*)—Grazing or trespass by cattle or flocks, and driving of cattle or flocks except on authorized or public roads and pathways.

(*k.*)—Collecting grass, brush-wood or fodder.

(*l.*)—Collecting fallen timber.

(*m.*)—Collecting gums, resins, wax, honey or other forest produce.

(*n.*)—Kindling a fire in the forest or carrying fire except on an authorized road or pathway.

(*o.*)—Carrying any implements for cutting wood or grass except on an authorized public road or pathway, and except it is carried in pursuance of a license to cut.

And generally no forest rights or privileges of any kind shall be exercised in reserved tracts.

Proviso for cases where privileges are to be allowed in reserved forests—Provided always that if in any case it has not been found practicable, when making the selection of reserved forests, to leave a sufficient or conveniently situated area of forest as unreserved for the exercise of forest privileges, or if there are no sufficient grazing grounds in the vicinity, or if in any other special case it shall be deemed desirable, the exercise of certain forest privileges may be allowed in the "reserved" forests.

Privileges allowed.—But in such cases the only privileges to be allowed are—

(*a.*)—Cutting wood for necessary building and agricultural purposes.

(*b.*)—Cutting grass.

(*c.*)—Grazing of cattle.

(*d.*)—Fuel.

12. *Definition of such privileges and conditions of exercise.*—When any privileges are allowed in a reserved forest under the proviso to the last preceding rule, such privileges shall be defined by the Superintendent of Chamba, in concert with the forest officers, and recorded, and the signature of the headmen of the village shall be affixed to such record.

Conditions of felling.—All trees felled under such circumstances shall be so pursuant to a written permit granted by the forest officer, which shall specify the place and other conditions of felling, and shall fix a fair and sufficient time within which such license must be exercised. Permits to fell must be returned to the forest officer as soon as the time mentioned therein has expired, or as soon as the trees have been felled, if felled before the expiry of the time.

Of other privileges.—Cutting grass, grazing and the collection of fuel to be practised in such portion of the forest as the forest officers shall assign for the purpose.

13. *Timber required for public works in special cases.*—If in any case in the execution of any public work, or in the making of any road or bridge, His Highness the Rajah shall require timber which cannot conveniently be taken from an unreserved forest, the forest officer shall, if the amount be reasonable, and can be spared without injury to the forest, give a written permit, authorizing the timber to be felled in a reserved forest in a suitable and proper locality.

14. *Closing unnecessary foot-paths in reserved forests.*—Whenever any unnecessary foot-path or road passes through a reserved forest, thereby rendering its proper conservancy difficult to maintain, the forest officers may, with the consent of the Superintendent of Chamba, close it against traffic. Due notice of the closing of such road or pathway shall be publicly given in the vicinity.

Chapter IV.

Of Timber in transit.

15. *Right to timber in transit not covered by a pass.*—All timber passing down the rivers Chinab and Ravi, across the boundary of the Chamba territory, unless covered by a pass from the Conservator of Forests, or one of his subordinates authorized to grant such passes, and unless marked in the manner described in the pass, shall be deemed to be the property of the British Government, and may be taken possession of by the Conservator of Forests or his subordinate as aforesaid; such timber shall not be released until the claimant proves his title to the satisfaction of the

Proof of ownership.

Conservator of Forests, or of his subordinate as aforesaid, and pays such expenses as may have been incurred in catching and keeping the timber.

16. *Removal, destruction and defacement of logs.*—No person shall, without the permission of the Conservator of Forests, or his subordinate, remove, cut up, burn, deface the marks of, or mark again, any timber whether stranded or floating, provided that this rule shall not interfere with the privilege of the villagers to take for fire-wood stranded pieces of timber, which are not, however, to be larger than *one man* can lift by himself.

Chapter V.

Of the punishment of Forest Offences.

17. *Offences in unreserved forests.*—Any person who breaks any rule relating to unreserved forests shall be liable to the jurisdiction of the Rajah of Chamba for punishment according to law.

18. *In reserved forests.*—Any person who breaks any rule relating to the "reserved forests" shall be liable on conviction before the Superintendent of Chamba State, or before a forest officer invested with Magisterial powers under Article V of the agreement, to fine not exceeding one hundred rupees, or, in default of payment, to three months' imprisonment with or without hard labor.

Proviso where act in breach of rules also constitutes a serious offence.—Provided always that when the act which is a breach of the rules amounts to a serious offence, such as mischief or theft, if the case is brought before the Superintendent, he may try the case as for such grave offence instead of proceeding under these rules; and if the case is brought before a forest officer with powers as aforesaid, he may, instead of proceeding as for a breach of the rules, forward the case with written report to the Superintendent of the Chamba State, who may try the case and award such punishment as may be proper.